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A MAP OF THE STATE OF PENNSYLVANIA:

BY SAMUEL BRECK,

Phragmites australis (Cav.) Trin. ex Steud.

PUBLISHED BY M. THOMAS, 52, CHESNUT STREET,

J. Maxwell, Printer

1818.

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NOTICE.

This second edition of the small work, with which I ventured before the public last July, has been revised and enlarged, and is in every respect, I hope, less imperfect than the first; particularly as regards the view of the head-waters of our principal rivers, which is now given in one map, instead of three. It is to the liberality, kindness and public-spirit of Mr. Mathew Carey, that I am indebted for this map. That gentleman not only gave me the use of the plate, but procured me every desirable facility in printing the map, and making the necessary alterations and additions to the plate: for all which I tender him my sincere thanks.

OBSERVATIONS

ON THE

INTERNAL IMPROVEMENTS OF PENNSYLVANIA,

AND

FUTURE GROWTH OF PHILADELPHIA.

THE OBJECT OF THIS PAMPHLET IS TWO-FOLD:

FIRST.—*To endeavour to vindicate the aspersed reputation of Pennsylvania from the general accusation of indifference with regard to her internal improvements; and,*

SECONDLY.—*To show the superior situation of Philadelphia, geographically considered, for the attraction of the great and increasing trade of the countries bordering on the Susquehanna, the Lakes, and the Western rivers.*

ON the first of these points, there has prevailed a very general silence. Thousands could have said, much better than myself, what I am desirous to communicate; but no one having stepped forth to rectify the erroneous opinions which exist both abroad and at home in relation to the efforts made by the legislature and the people, for the advancement of the interior of this commonwealth, I have ventured, with great diffidence, to lay before the public, such proofs as I possess, in order to contradict these disadvantageous reports. We listen with patience to the New-England, New-York, and Maryland writers, whose praises on their own doings, rise, not unfrequently, to the most exalted panegyric. We republish these praises, in perfect good nature, notwithstanding they are commonly accompanied by side-blows at *poor Pennsylvania*, which those writers affect to pity, because it is possessed, as they say, by a government and people supine and sluggish. If 'silence gives consent,' we must indeed be the contemptible race hinted at; for in relation to these accusations, our editors and writers seem tongue-tied. To disprove such discreditable allusions, as far as my humble efforts could reach, I obtained a place for a few numbers upon this subject, in a respectable newspaper of this city; but finding it susceptible of considerable development, and supposing that it might be made somewhat interesting by condensing it into an unbroken form, I have incorporated the substance of these numbers into the matter which compose the following sheets.

My aim is to show that Pennsylvania has *not* been stationary in her improvements; but that, on the contrary, she has achieved very much within the last six years;—that she has, with great public spirit granted numerous charters for turnpike roads, bridges, canals, &c. the major part of which she has aided with funds to an amount exceeding two millions of dollars;—that her public seminaries and primary schools have been patronized by laws and by money;—that her agriculture has improved, and her general polity been attended to by her Legislature with skill and vigilance;—in a word, that this beautiful and wealthy state is second to none, either in liberality for past, or means for future expenditure.

In the year 1810, William J. Duane, Esq. of Philadelphia, published a pamphlet full of useful information upon the *then* state of the interior of this Commonwealth, with a masterly exhibition of its capabilities, if properly exerted. That work cannot be too extensively circulated at *this moment*, when the *Philadelphia* public are listening to, and acting in measures, big with the future prosperity of our city.

The spirit of internal improvement which animated the Legislature soon after the appearance of Mr. Duane's pamphlet, may fairly be attributed, in great part, to that gentleman's writings. That spirit has continued with a zeal proportioned to the funds of the State, until the last session; that is to say, with such funds as could be commanded without selling her bank stock. Whether this stock should be broken in upon or not, I propose to consider hereafter. That inertness which Mr. Duane complained of in 1810, has *now* disappeared. It must be owned, however, that there was *then* some cause for such a complaint. But the subsequent exertions, liberality, and intelligence of the Legislature, ought to have changed those sentiments, which, though applicable to our rulers in 1810, have become unjust in 1818. It is the continuation of such unfavourable impression, which I regret, and which it shall be my endeavour to eradicate.

If it be asked what the Legislature has done? I answer, that as early as the 13th of April, 1791, there was appropriated for rivers, creeks, and canals, the sum of

	-	-	\$80,587
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For roads, the same day and year,	-	-	20,200
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On the 10th of April, 1792, for opening various roads,			
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improving rivers, creeks, &c.	-	-	21,306
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On the 11th of April, 1793, for similar objects,			38,221
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			\$160,314
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Between 1793 and 1808, several annual appropriations were voted for public objects, which amount in the aggregate to a large sum, of which I shall make no account, but proceed to the year 1808, when an act was passed, authorizing the governor to subscribe three thousand four hundred shares to the stock of six or seven turnpike companies then incorporated. In April, 1811, another act was pass-

ed appropriating eight hundred and twenty-five thousand dollars to the following objects:

A turnpike road from Harrisburg to Pittsburg,	\$350,000
Ditto from Northumberland to Waterford, in the county of Erie,	200,000
Downingstown, Ephrata, and Harrisburg road,	5,000
Milford and Owego, ditto,	20,000
Harrisburg bridge over the Susquehanna,	90,000
Northumberland ditto ditto,	50,000
Columbia, ditto ditto,	90,000
M'Call's ferry, ditto ditto	20,000
	<hr/>
	\$825,000
	<hr/>

To M'Call's ferry bridge company, a further sum of nine thousand dollars was lent upon mortgage; which by an act of last winter was converted into a free gift.

By an act of the same date, the following sums were voted for the following purposes:

For opening a road in Somerset county,	\$1,500
For other roads in said county,	1,000
For ditto in Cambria county,	500
For ditto in Franklin,	600
For ditto in Mifflin,	600
For ditto in Northumberland,	750
For ditto in Bedford,	1,400
For ditto in Cumberland,	600
For ditto in Wayne,	1,000
For ditto in Northampton,	1,000
For ditto in Dauphin,	700
For ditto in Tioga,	500
For ditto in Ontario,	750
For ditto in Erie,	450
For ditto in Crawford,	600
For ditto in Conewango,	300
For ditto in Venango,	500
For ditto in Butler,	700
For ditto in Allegheny,	1,000
For ditto in Indiana,	1,400
For ditto in Clearfield,	700
For ditto in Mercer,	600
For ditto in Beaver,	500
For ditto in Centre,	680
For ditto in Westmoreland,	1,400
For ditto in Adams,	600
For ditto in Greene,	300

The Inspectors of the State Prison in Philadelphia received

by the same law, a donation for the new jail of 5,000

\$25,630

It was about this time the Legislature began to distribute its *solid* bounties with very distinguished liberality. Laws had been obtained many years before for the construction of roads, canals, &c. and considerable appropriations were made, as I have shown—but now much larger sums were drawn from the treasury in aid of these useful objects. The appropriations, as we see, were in this single year eight hundred and fifty thousand six hundred and thirty dollars!

The war with England took place the next year: it abated, but did not destroy this good disposition; for notwithstanding the *State* expenses of that war amounted to* nine hundred and eighty-four thousand dollars,† for which she makes no claim on the general government, yet the Legislature appropriated in the years which intervened between 1812 and 1816, for internal improvements, public works, academies, schools, &c. the sum of seven hundred and ninety-six thousand three hundred and thirty-five dollars, thus:

In 1811—12,	.	.	.	\$222,500	} for roads, rivers, &c.
1812—13,	.	.	.	91,100	
1814—15—16,	.	.	.	214,735	

For other public works within the same period, including schools, academies, &c. 268,000

\$796,335

That is to say, in four years, three of which we were in a state of warfare, and obliged to contribute largely for public defence in men and money, the government of this Commonwealth, so much—so shamefully—so unjustly abused for its apathy and disregard of the general welfare of its people, voted an average *annual* sum of nearly two hundred thousand dollars for public improvements!—

In addition to the foregoing, the following specific appropriations were voted in the session of 1816—17; appropriations which I give here in detail, to show the wide and liberal view the Legislature took of the wants of the whole Commonwealth, without sectional or political partialities.

* Report of the committee of ways and means, last session.

† Gratuities to old soldiers,	7,200
Purchase of arms, &c. in late war,	57,732
Amount otherwise expended in the late war, and paid,	919,625

\$984,557

**APPROPRIATIONS MADE BY THE LEGISLATURE AT THE SESSION
OF 1816—17.***

TURNPIKE ROADS.

Greensburg and Pittsburg, per act of 24th March			
1817, 400 shares, at 50 dollars per share,	\$20,000		
Stoystown and Greensburg, 650 ditto, .	32,000		
Bedford and Stoystown, 500 ditto, .	25,000		
Chambersburg and Bedford, 700 ditto, .	35,000		
Harrisburg and Chambersburg, 300 ditto, .	15,000	127,000	
York and Gettysburg, 150 ditto, at 100 dollars per			
share,	15,000		
Pittsburg and Butler, 700 at 50 ditto, .	35,000		
Reading to Hummelston, 300 ditto, .	15,000		
Wilkesbarre and Easton, 300 ditto, .	15,000		
Cayuga and Susquehanna, 300, at 20 dollars,	6,000		
Bellemont and Easton, 200, at 50, .	10,000		
Blue Ball and Binkley's, 50 ditto, .	2,500		
Bridgewater and Wilkesbarre, 200 ditto, .	10,000		
Milford and Owego, 200 at 25 dollars, .	5,000		
Jerseyshore to Condersport, 400 at 50 ditto,	20,000		
Gap and Newport, 200 at 50 ditto, .	10,000		
Huntingdon and Cambria, 600 at ditto, .	20,000		
Beaver to State line,	15,000		
Downingstown and Ephrata,	20,000		
Perkiomen and Reading,	13,000		
Morgan and Churchtown,	5,000	216,500	
			<hr/>
			\$343,500

BRIDGDS.

Bridge over Buffalo; per act 24th March, 1817,	\$600		
ditto French Creek,	2,000		
ditto Great Conewago,	1,500		
ditto Loyalhanna,	2,000	6,100	
			<hr/>
			\$349,600

COMMON ROADS.

Logan's Narrows to Presque Isle, per act 24th			
March, 1817,	\$800		
Block house road to State line, ditto, .	2,000		
Millersberg to Mohontongo, ditto, .	700		
Mohontongo to Sunbury, ditto,	1,300		
State road through Somerset, Fayette, and			
Green, ditto,	4,000	8,800	
			<hr/>
			\$358,400

* Report on the finances of the Commonwealth, by the Auditor General.

Amount brought over,	.	.	.	\$358,400
Frankstown to Conewagh, ditto,	.	.	.	1,500
State line Warren county, to Meadville, ditto,	.	.	.	3,000
Easton to Adam Romigs, ditto,	.	.	.	2,000
Blair's Gap to the Western boundary of the				
State, ditto,	.	.	.	3,000
Over White Deer mountain, ditto,	.	.	.	500
Indiana to Pittsburg, ditto,	.	.	.	500
ditto to ditto, ditto,	.	.	.	500
Jonestown to Wilkesbarre,	.	.	.	300
Franklin county line to Sidling hill,	.	.	.	400
Strasburg to Letter Kenny, ditto,	.	.	.	200
Carlisle to Littleton, ditto,	.	.	.	1,600
In Mercer county, ditto,	.	.	.	2,000
Glade road in Somerset to Jones' mill, West-				
moreland, ditto,	.	.	.	1,000
Lewistown, across the Shade and Black Log				
mountains, ditto,	.	.	.	500 17,000

RIVERS AND CREEKS.

Delaware river, per act 13th March, 1817,				10,000
Susquehanna river, ditto,	.	.	.	3,000
ditto Ohio for viewing, ditto,	.	.	.	2,000
Allegheny river, by act 24th March, 1817,				1,600
Schuylkill ditto, ditto,	.	.	.	50,000
Monongahela ditto, ditto,	.	.	.	30,000
Lehigh ditto, ditto,	.	.	.	30,000
Conewaugh ditto, ditto,	.	.	.	1,500
Conewango creek, ditto,	.	.	.	200
French ditto, ditto,	.	.	.	800
Mahoning ditto, ditto,	.	.	.	800
Red Bank ditto, ditto,	.	.	.	1,000
Toby's ditto, ditto,	.	.	.	200
Big Swatara, ditto, ditto,	.	.	.	300 131,400

MISCELLANEOUS.

Piers at Chester, Delaware, ditto,	.	.	.	8,000
Wharves at Kittaning, ditto,	.	.	.	700
West Chester Academy, ditto,	.	.	.	1,000
Allegheny College, ditto,	.	.	.	2,000
Wellsborough Academy, ditto,	.	.	.	2,000 13,700

\$520,500

The appropriations of the last winter were not so large, yet when it is considered that much of those sums formerly voted had not been called for; in some measure owing to the private subscription to the objects which they were intended to aid, not being filled to the amount required by law, the sum voted last session is generous and respectable. It is as follows:

For bridges at York and Milton, a free gift, to replace those lost by floods last fall	\$11,000	
Academy at Harrisburg.	1,000	
Penitentiary at Pittsburg,	60,000	
M'Call's ferry bridge,	9,000	
Miscellaneous,	8,000	*89,000

By an act passed the 19th of March, 1816, this Commonwealth gave to the charity hospital at New Orleans the sum of five thousand dollars, upon the express condition that it be exclusively destined to give to the buildings of said hospital an extent, which might enable them to receive a greater number of sick; and they also by the same law appropriated and granted to the trustees of the said hospital, for the space of ten years, an annuity of five hundred dollars a year, commencing January the first, 1816, to be applied by, and under the direction of said trustees, solely and exclusively to and for the relief of such persons as are employed in the trade from Pennsylvania, attacked by disease in New-Orleans, provided they are not able to defray the expenses of the hospital themselves; these I put down at 10,000

Some incidental appropriations to the use of the Penitentiary and Hospital in Philadelphia— made within the last six years,	20,000	30,000
		<u>\$119,000</u>

These appropriations, the principal part of which has been voted since 1811, will stand thus:

In 1791—2—3,		\$160,314
In 1811, for the use of incorporated companies,	825,000	
For private roads, &c.	25,630	850,630
During the war with England for like purposes,		796,335
During the session of 1816—17,		521,500
The appropriations of last winter, including those for academies, bridges, &c. and penitentiary, (with Phi- ladelphia and New-Orleans hospital, in 1816,) not in- cluded in former statement,		119,000
		<u>\$2,446,779</u>

Making a grand total, for roads, &c. on the part of the state, of two millions, four hundred and forty-six thousand, seven hundred

* In addition to these, the Legislature has made it a rule to give two thousand dollars to each of the counties, in aid of their academies: it may be considered as a kind of pledge; and as only about ten counties out of fifty have received that sum, I view the State as willing to grant a like sum to the other forty when called for.

and seventy-nine dollars, besides paying the ordinary expenses of government, supporting a number of revolutionary soldiers, on an annual pension of eighteen thousand dollars, and for the last three or four years bearing a militia expense of nearly forty thousand dollars per annum!

Both Houses of the Legislature were disposed to grant considerable sums last winter; but unfortunately they differed as to the objects to which they were to be applied; and thus the Senate rejected a bill from the House of Representatives, granting one per cent. for *six* years on sales by auction in Philadelphia, for the use of the Schuylkill navigation; a grant which would probably have yielded four hundred and eighty thousand dollars: Eighty thousand being the amount paid in one year to the treasury for a like duty: And thus the House of Representatives refused to concur in a bill sent from the Senate for the relief of Dickinson college, granting to that institution the remission of a debt to the commonwealth of five thousand dollars, together with a free gift of three thousand, and an annuity for ten years of two thousand. A proportional aid was likewise voted by the Senate to the two western colleges of Washington and Jefferson. These bills were lost, not from an indisposition to patronize public objects; but for want of harmony as to the application of the money.

Having thus taken a brief view of the disbursements from the public treasury, let us next consider what has been performed by individuals;—let us see what the enterprize and labours of chartered companies and others, stimulated by those generous grants, and under the guidance of wholesome laws, have done and are now doing. For this purpose, I shall examine the subject somewhat minutely, by dividing it into

1st—Roads.

2d—Bridges.

3d—Rivers and Canals.

4th—Seminaries and Schools, to which I shall add as a fifth item, a view of the finances of the Commonwealth; and—

6th—A glance at our internal regulations as established according to the policy of the state government.

TURNPIKE ROADS.

It must be held in remembrance by the reader, that all Turnpikes made in Pennsylvania, are literally *artificial roads*; that is to say, composed of broken stones of the hardest substance, taken from quarries, oft-times many miles distant, and formed into a solid pavement of Granite, Flint, Lime-stone, or Marble, suitable for heavy transportation wagons, of three to five tons weight, and usually drawn by four or six horses. Roads thus constructed are of course, very expensive, and cost about six thousand dollars per mile. This average I presume to be correct, because the turnpike from Philadelphia to Columbia, a distance of seventy-two miles, cost more than seven thousand dollars per mile; because the road across the Laurel Hill in the Allegheny mountains, cost per mile

more than ten thousand dollars; and many of the roads in the neighbourhood of this city were still more expensive: for instance, the five miles next to Philadelphia, on the Lancaster turnpike, cost at the rate of 14,517 dollars a mile; the other twenty miles at the rate of 10,490 dollars a mile; and this too without any natural impediments or large bridges. The Lancaster road, sixty-two miles long, cost 465,000 dollars, or 7,500 dollars per mile; yet many sections of those running from Harrisburg to Chambersburg, and in other parts of the state, have been contracted for at four thousand, and some few even under that sum. The true medium is perhaps the one I have assumed. In the course of next summer it is expected that the great road, thus firmly constructed, between the two cities of Philadelphia and Pittsburg, will be finished.* The distance is three hundred miles, and the cost cannot be less than 6,000 dollars a mile from Lancaster, which, including that of the great bridge at Columbia, will make the whole expense of this magnificent undertaking stand thus:

Cost of road from Philadelphia to Lancaster,	\$465,000
238 miles from Lancaster to Pittsburg, at 6,000 dollars,	1,428,000
Bridge over the Susquehanna at Columbia,	230,000
	<hr/>
	\$2,123,000

These permanent roads, very many of which are worthy of the epithet *Roman*,—so solidly formed, and constructed at so much expense, must not be confounded with those which have been so hastily and so extensively made in New-England and New-York.—In Connecticut, thirty-two companies out of fifty, which had been incorporated in the year 1803, constructed 615 miles for 340,000 dollars, or about 550 dollars per mile. There the nature of the soil, and the custom of using light carriages, contribute both to the formation and preservation of the roads. Nothing more is required to make them, than to level the hills to four degrees, form ditches or drains on each side, and raise the centre so as to carry off the water; all which is executed rapidly and cheaply—perhaps at a less average cost than five hundred dollars a mile. There are exceptions in Connecticut, Massachusetts, and in New-York, to this cheap way of making their roads; for some near Boston, New-Haven, and Albany, cost from 2,800 to 12,500, and even 14,000 dollars per mile; but the average expense did not, perhaps, exceed the sum at which I have placed it. The Pennsylvania roads, on the contrary, are made with the hardest stones of the country, and so constructed, that, with occasional repairs, they resist the pressure of her numerous heavy wagons—the frosts of winter, and the torrents of summer; and at every stream, are united by stone bridges, which cost from five hundred to fifteen thousand dollars. These roads, which require nothing but twelve inch wheels to

* Intelligent travellers assert that fifteen hundred men are now at work upon the unfinished sections of this road.

make them perfect, will shortly connect the principal points of the Commonwealth, thus:

From Philadelphia through Lancaster, York, &c. to	
Pittsburg,	300 miles
From York Haven to Maryland line,	24
From Lancaster to Chambersburg, through Harrisburg,	84
From Downingstown through Ephrata to Harrisburg,	66
From Philadelphia to Harrisburg through Reading,	112
From Reading to Sunbury,	66
From Berwick to Lausanne, on the Lehigh,	30
From Philadelphia to Baltimore by Port Deposit,	50
From Philadelphia to Perkiomen through Norristown,	30
From Philadelphia to Trenton, including Bustleton,	40
From Spring-house Tavern, Willow Grove, &c.	20
Sundry other roads near Berwick, Wilkesbarre, Gettysburg, Easton, Huntingdon, &c.	220
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Making near one thousand and fifty miles of paved road, with no ascent or descent exceeding four degrees, and which cost about six millions of dollars; towards which the state has paid, or is pledged to pay, about one million two hundred thousand dollars.

The parent of all the turnpikes in America, is that which leads from this city to Lancaster, sixty-two miles long, and which was completed in 1794. Since then, *only twenty-four years*, an addition of nearly one thousand miles, in part over a mountainous country, has been made, or is in progress of completion. The consequence is, that wagons now transport, even in winter, at the rate of twenty-two miles a day, with four horses, a burthen equivalent to twenty-eight barrels of flour, instead of fourteen, which formerly made a load; and this too without the danger of being mired and frozen up for many weeks, as frequently happened in winter, before the turnpikes were established. The Transporting Company, lately incorporated, will, with their ten mile relays, travel much faster. Already the annual wagon-freight between the Ohio and this city, is computed at a million of dollars. When the roads are completed, the whole amount of transport money, on all the existing turnpike roads of this state will probably be double that sum. Ten wagons leave Philadelphia for Pittsburg every day, one day with another, taking an average freight of 200 dollars, which gives 730,000 dollars outward, and probably one-third inward. The wagoning on the other roads must at least equal this. To show the vast movement in the interior of Pennsylvania, I copy the following account, taken by the keeper of the turnpike-gate on the Chesnut ridge, between Chambersburg and Bedford. It appears that there passed through his gate, during the year ending in May last, 7,120 single horses, 350 one horse carriages, 501 two horse ditto, 105 three horse ditto, 281 four horse ditto, 2412 five horse ditto, 2698 six horse ditto, 38 one horse sleighs and sleds, 201 two horse ditto ditto; making altogether the number of 38,609

horses, in the course of the *first year* that has expired since the erection of the gate.

The Transporting Company, authorised by a law of last session, have a capital of one hundred thousand dollars. They have despatched four wagons daily (Sundays excepted) since the month of May last: two from Philadelphia and two from Pittsburg, and are now making preparations to double that number. These wagons take fresh horses every ten miles, and travel day and night. Freight from this city to Pittsburg, previous to their establishment, varied from \$7 50 cts. to \$10 50 cts. per hundred weight. It has been reduced, by their means, to \$6 50 cts. After next summer, when the road will be finished the whole way, they will send, if necessary, ten carriages daily, at as low a freight as four dollars, and perform the journey of 300 miles in 8 days. Many of our turnpikes yield the stockholders six per cent.; some have divided as high as eight. Too much praise cannot be given to these great exertions; they have changed the face of the country.

BRIDGES.

It is in bridges that Pennsylvania appears superior to her neighbours. The Schuylkill exhibits some beautiful specimens of hydraulic architecture. The bridges at Market-street and at Sheridan's, are noble structures; particularly the former, which offered in the construction of the western pier, difficulties the most formidable. Nothing short of great good fortune, combined with unremitting industry could have overcome them. The construction of the coffer-dam alone for this pier, consumed seven months; two of which were employed in incessant pumping, (day and night) clearing and combatting casualties and impediments the most expensive and embarrassing. The whole masonry of the pier is laid upon an irregular rock, (giving little or no support to piles,) to the depth of 29 feet below low water mark, and at high tide to 41 feet deep, forming a pier of solid masonry, having 7250 tons on its foundation.

The stone work was begun on a Christmas day, in a severe winter, at the bottom of the deepest channel in the river Schuylkill, and carried up to near low water mark in 40 days, when the work was intermitted to wait the milder weather of the spring.

Mr. William Weston, son-in-law and pupil to the famous engineer, *Brindley*, and who is so advantageously known in America, furnished the plan of the coffer-dam *gratis*; but not with much expectation that it would be useful in so great a depth of water. Every thing, however, yielded to the skill and perseverance of the president and committee of managers, and upon the completion of the pier, Mr. Weston wrote from England a letter, from which the following is an extract, addressed to the honourable judge Peters, president of the bridge company:

"Gainsborough, (in England,) 4th May, 1803.

"I most sincerely rejoice at the final success that has crowned your persevering efforts, in the erection of the western pier. It

will afford you matter of well-founded triumph, when I tell you, that you have accomplished an undertaking *unrivalled by any thing of the kind that Europe can boast of*. I have never in the course of my experience, or reading, heard of a pier founded in such a depth of water, on an irregular rock, affording little or no support to the piles. That the work should be expensive—expensive beyond your ideas—I had no doubt; the amount thereof, with all the advantages derived from experience, I could not pretend to determine; and if known, would only have tended to produce hesitation and irresolution in a business, where nothing but the most determined, unceasing perseverance, could enable you to succeed.”

This beautiful bridge, the middle arch of which is 195 feet wide, has 550 feet *under cover*, and 750 feet in abutments and wing-walls, and has been aptly called the *alpha* of American hydraulic architecture; particularly in the example it gave of covering the wood-work. It was the first bridge roofed on this side of the Atlantick, and perhaps the second specimen in the world, (the bridge at Schaffhausen was the first) of the advantage of securing a wooden superstructure from the weather by a shingle roof.

It is at this time, matter of surprize, that the honourable president, who was the original promoter and so far the founder of that enterprize, (then generally considered as almost impracticable,) had difficulties to encounter, before he could procure the adoption of his plan for *covering* that bridge. He must have great satisfaction now, in the reflection that he was the first to propose and furnish a draught of, a *cover for a bridge* in this country. The precedent has been followed undeviatingly, in all subsequent erections; and is now as much a matter of course, as are piers, butments, or other parts of these meritorious and highly useful fabrics. Those, however, who have projected and built bridges since, have never had to overcome so many *aqueous* difficulties, or to encounter and conquer so many prejudices and apprehensions, as this new and unexampled undertaking excited.

Opposite the north-western part of Philadelphia, stands the Lancaster Schuylkill bridge, which is not only secured, by an excellent roof, against the effects of *atmospheric rot*, but likewise against those of the *dry rot*. The method adopted in the latter case is worthy of imitation. Mr. Lewis Wernwag, the architect, aware that timber purchased promiscuously of strangers, would often be found to have been cut at a season, when it was full of sap, and that the sap thus confined, will ferment in every situation, whether covered or uncovered, and produce the dry rot, unless evaporated, caused each stick of timber to be sawed through the heart, which gave him an opportunity of rejecting many defective pieces, that were carious within, although sound without; and his bridge was thus constructed of timber, six inches only in breadth, the heart of which being exposed to the air, can never decay by the fermentation of its sap. Nothing can be more beautifully com-

bined than these narrow pieces with bolts and rods of iron; exhibiting a plan admirably well calculated for durability and strength, and by which a bridge may be carried on one arch perhaps six hundred feet. The bridge now standing consists of a single arc of 340 feet, and is a proof that an arch upon the same model may with perfect security be made much longer than 200 feet, which had been considered by all bridge-builders before this experiment was made, as the maximum breadth for safe arches.

Beautiful and useful as these structures are, they do not equal in magnificence—in grandeur of appearance, those gigantic bridges which stretch on arches and piers across the Susquehanna. The mind contemplates with wonder those fine monuments of the arts, conceived and executed with a boldness unparalleled in any part of the universe. Yes, in these useful improvements, Pennsylvania eclipses not only her sister states, but even the Eastern hemisphere. In order to prove it, I will show the dimensions of the principal bridges of the old world, and afterwards compare them with those of our own state.

Nimrod is said to have built a bridge of one arch, over the Euphrates of six hundred and sixty feet long; and we are told of another bridge, now standing in China, seven hundred and fifty feet high, with a cord of six hundred feet. But as the first of these is involved in the fable of Babylonian history, and the second has never been seen by any European writer, the probability is that the extent of both has been greatly exaggerated, more especially that of the latter, since all Chinese arches, described by sir George Staunton and Mr. Ellis appear to be small. In Bootan in Asia, there are some curious bridges of rope and chain from one hundred and fifty to two hundred and twenty feet long; but they are merely make-shifts; the one for sliding over precipices in a basket, as among the bird-egg hunters in Scotland, and the other for foot passengers.

Europe displays, in this art, a greater variety, much more solidity, and much more beauty than Asia. Some of her most curious bridges are in Switzerland. One of these, of wood and roofed, stands at Wettingen, and has an arch of two hundred feet span; one still larger stood at Schaffhausen, built by the same architect, *Ulrich Grubenman*, and extended *on two* arches, about four hundred feet. This bridge was burnt in the late wars by the French. The famous marble bridge at Venice—the Rialto, is but one hundred feet span. In Russia, Germany, France, Portugal and Spain, there are several fine bridges of wood and stone extending from two to four thousand feet in length; but none with a larger arch than *one hundred and seventy feet*.

The largest arch in Europe is to be found in England. It is at Wearmouth, and is two hundred and thirty-six feet span. Not another arch exists in Great Britain so long by one hundred feet.

In America we have the following remarkable bridges *out of Pennsylvania*.

Charles river bridge, near Boston, 1503 feet long, on 75 piers. West Boston, over the same river, 3480 feet long, on 180 piers. Lake Cayuga bridge 5280 feet long, on 210 piers; and one of similar construction over the Potomac at Washington. All these bridges are of timber and uncovered. In New Hampshire and Massachusetts there are several beautiful bridges, one of which had, till lately, the largest arch in the world: this was over the Piscataqua, and measured 244 feet. This arch, as may be seen, exceeded the largest European arch by eight feet.

In *Pennsylvania*, we shall find our bridges universally built upon stone piers, and very generally protected from the weather by handsome roofs. These shingle covers, when renewed every 30 or 40 years, give a durability to the wooden superstructure almost equal to those which are constructed wholly of stone. Yet durability and strength are but a part of their superior attributes for they exceed all others in America, by the breadth of arch, chastity of style, and boldness of execution.

The chord of the arch of the Lancaster Schuylkill bridge is 340 feet—almost 100 feet more than the largest which existed anywhere before it was built; even this has been exceeded by one of our own bridges over the Susquehanna, at M'Call's ferry, the arch of which extended to 366 feet straight cord.

These Pennsylvanian bridges have been erected at vast expense. For instance,

The bridge at Market Street cost	-	-	-	275,000
That at Columbia, which is a mile and a quarter long, and covered	-	-	-	230,000
That at Harrisburg, upon 12 arches of 220 to 240 feet each, with an excellent cover, the windows of which are glazed	-	-	-	195,000
Bridge at Northumberland, likewise covered	-	-	-	98,500
Bridge at Sheridan's, near Philadelphia, also covered	-	-	-	100,000
Three over the Delaware, four over the Schuylkill, five over the Susquehanna, besides those enumerated, and two over the western waters near Pittsburgh, estimated at	-	-	-	810,000
				<hr/> \$1,708,500

The total cost of these bridges of the first class, (and those of the second are both numerous and expensive,) amounts then to one million, seven hundred and eight thousand and five hundred dollars!

The state legislature has contributed about four hundred thousand dollars towards these expenses. In the bridges of Columbia and Harrisburg, the state holds stock to the amount of one hundred and eighty thousand dollars. Many of these bridges produce six per cent. Those on the Susquehanna, notwithstanding their great cost, give handsome dividends, and are an evidence of ac-

tive and constant movement through the interior of the state; since the Harrisburg bridge take tolls to the amount of fifty dollars a day, and the Columbia about forty.

RIVERS AND CANALS.

Pennsylvania, when a province, passed many laws to enlarge, straighten, and deepen her rivers. Since her independence, she has never lost sight of those highly important objects; every stream of any size or probable usefulness, has been examined by order of government, and reports made upon them to the executive. Two companies were incorporated in 1790 and 1791, for joining the waters of the Susquehanna with those of the Delaware, by means of the Swatara and Schuylkill. Very considerable progress was made in these works, both in Philadelphia and Dauphin counties, at an expense of 500,000 dollars. These two companies were consolidated into one, in 1811, under the title of the *Union Canal company*, and authorized to raise \$340,000 by lottery. About \$60,000 of this sum have been realized; and the managers are now getting the old works resurveyed, with a view to proceed in this great business. The law authorizes them to extend their canal or water communication to lake Erie. An annual sum of *thirty thousand* dollars, which is now the yearly product of the lottery, will soon be at their disposal; for their debts are mostly paid off; and as the Schuylkill company has undertaken to perfect the navigation of *that* river, the Union Company will be able to give their undivided attention, with their whole funds, to the junction of the Tulpahoken and Swatara rivers, by completing the canal (of which four miles, with five locks, are already made) near Lebanon.

The state has appropriated \$50,000 in addition to former sums, in aid of the Schuylkill company; and the house of representatives showed, as I have already observed, a good disposition to contribute four hundred and eighty thousand more, by passing a law last session, to raise that sum in six years, by a tax of one per cent on auctions. This law unfortunately failed in the senate by a small majority. But I am rejoiced to be able to state that the managers have obtained, from private subscriptions, the whole of the sum wanted to complete the navigation of the Schuylkill, from its source to its mouth, and secure an up and down passage of three feet of water, at all seasons of the year. Three hundred thousand dollars were asked of the public, and subscribed in a few days. The attention of Philadelphia is at length directed towards the inexhaustible sources of its future prosperity. This subject I propose to treat at large by and by.

Laws the most liberal exist for the union of the waters of the Chesapeake with the Delaware, coupled with a grant of money, upon certain conditions. One canal has been completed many years on the western side of the Conewago falls; and another still more extensive, and sufficiently large for rafts and arcs, as well as

boats, is now digging by an enterprising individual, Mr. Hopkins, of Lancaster. Laws likewise exist for improving the Brandywine and Lehigh, by lock navigation. The company in whose favour a law was passed last session, for opening the navigation of the Lehigh, have given an interest in their charter to several rich individuals of Philadelphia, from whom they have obtained a loan of fifty thousand dollars. With this sum they have already completed one dam, and are occupied with great industry in deepening the water at the other difficult passages, in order to open a good channel for boats of ten tons from Lausanne (45 miles above Easton) to the Delaware, for the transportation of coal and other produce to Philadelphia this autumn. The undertakers are chartered by a law of last session, and are bound to carry the improvements on that river to the foot of the great falls, where a turnpike road intersects it from the Susquehanna at Wilkesbarre, only about seventeen miles from river to river. By a former law, \$30,000 were appropriated by the state for clearing the Lehigh; but the present company have relinquished this appropriation. In connection with the Lehigh, which empties into the Delaware at Easton, I may mention that the Legislature of Pennsylvania appointed in March 1817, commissioners to meet others from New Jersey, for the purpose of negotiating a removal of all the mill-dams on either side of the Delaware, which obstructed the free navigation of that river, and that ten thousand dollars were voted, to clear away such other impediments as might delay the boats or rafts in their passage to Philadelphia.

Besides the five hundred thousand dollars already spent on the canals adjacent to the Schuylkill, two hundred thousand are pledged for contracts, which will be finished in November next, and three hundred thousand have recently been subscribed. Already the following works on this river are nearly perfected:

* A canal round the great falls, and a dam across the channel of the river, by which the water is deepened up to the place where the locks are building, near the Flat Rock.

A *crib* dam about six hundred feet in length across the river, and thirteen or fourteen feet high, a little above the Flat Rock bridge, and from this dam, near the eastern shore of the river a canal of sufficient width and depth for a descending and ascending navigation, extending two miles down the stream, with communications, by means of four locks, with the river below; likewise several dams, canals, and locks, in an upper section of the river in Schuylkill county, which are to overcome a fall of ninety-seven feet in six miles. Mr. Lewis Wernwag, who is the contractor for these works, has stipulated to complete, by the first of November next, an easy and safe lock navigation through that difficult section.

In August 1816, when the water of the Schuylkill was extremely low from the drought of the season, the board of managers,

* Address of the managers of the Schuylkill navigation company to the stockholders.

believing it to be of considerable importance to ascertain what volume of water this river usually furnished in so dry a season, appointed a committee to measure it. They repaired to a place called the Narrows, about three miles above the great falls, where the whole of the water was running through a confined passage. They found this passage, (clear of the bank eddies) to be sixty feet wide, and on an average, four feet nine inches deep, with a current running at the rate of 163 feet in a minute;—thus delivering 46,455 cubic feet of water every minute: and allowing one-tenth to be lost by the leakage of the dam, this water, with a head and fall of 25 feet, would turn day and night, about *one hundred and forty* overshot mill wheels, grinding wheat, allowing each wheel to require five cubic feet in a second.

The Schuylkill improvements will probably be completed next year. Its waters, as a connecting link with those of the Susquehanna, are invaluable to Philadelphia, and will be more particularly considered hereafter.

SEMINARIES AND SCHOOLS.

Pennsylvania has done something for colleges and schools—she might have done more. It is much to be regretted that she has not been more liberal in the distribution of her riches, even among the minor academies; but it would have been particularly desirable to see her patronize, *with special love and care*, one central school—one seminary of genius, in which the promising youth of the State could find, *at little cost*, professors of all the higher branches of science, and procure that aid in perfecting their education, which should send them forth ‘the best patterns of their species,’ and give a dignity to that nature of which we all participate.’

Philadelphia has many of the elements of such a school within her ‘University;’ but many yet are wanting. It is the sovereign hand of the State alone that can collect and sustain them all in one focus; and give to the great whole, or to each constituent part, a full and efficient support. May we hope that the day is not distant, when she will make it her pride and her duty to accomplish this all important task. Meantime the following is an estimate of what the colonial, revolutionary and present governments of Pennsylvania have done, by gifts in money and land, for the existing seminaries.

The University of Pennsylvania has derived, principally from those sources, its present valuable possessions. It is due, however, to the Penn family to mention that they have contributed generously towards these funds.

The University now owns in real estate, ground-rents, bonds, and mortgages, a property estimated to be worth two hundred and thirty-seven thousand dollars.

This includes the proceeds of the Perkasie Manor, which has lately been

sold for about sixty-two thousand dollars, and comprehends likewise three thousand dollars given by the present government for a botanical garden.

237,000

*Dickinson college was incorporated in September 1783, and in April 1786 received a State grant of 500 pounds, 1333 33 and 10,000 acres of land valued now at 3 dollars. - - - - 30,000

In October 1788, a lot and buildings in the borough of Carlisle were granted to the college, which are valued, as I understand, at - - - - 2,000

By acts of the 27th March and 29th Sept. 1789, the college was entitled to one-fifth of the nett proceeds of a lottery established by law; and by an act of the 20th September, 1791, a sum of four thousand dollars was appropriated for the immediate relief of the college: this sum and the proceeds of the lottery, I put at - - - - 5,000

In April 1795, a further sum was granted to this college of - - - - 5,000

In March 1803, a loan was made to it of 6,000

And in February 1806, a further loan of } 4,000
free interest for five years,

—————53,333 33

I refer the reader to what I have already said as to the good disposition of the senate last session to grant a large additional aid to this college.

In March 1787, 'Franklin College,' in the then borough of Lancaster, was established and endowed with ten thousand acres of land, which may be valued at three dollars, - - - - 30,000

And in February 1788, this college received a grant of the public store-house and two lots of ground in that borough, which could not be worth less than 2,000

—————32,000
5,000

Jefferson College has received, - - - -

†327,333 33

The state appropriated by an act of 1786, sixty thousand acres of land for the sole and express purpose of endowing public schools

* Smith's edition of Laws, vol. 2.

† Upwards of fifty laws exist, establishing and endowing academies, with one and two thousand dollars each.

in the different counties of the commonwealth, agreeably to the first section of the seventh article of the constitution, which is in these words: 'The Legislature shall, as soon as conveniently may be, provide by law, for the establishment of schools throughout the state, in such manner that the poor may be taught *gratis*.' And in order more completely to fulfil this constitutional injunction, a law was passed on the 4th April, 1809, entitled, 'An Act to provide for the education of the poor gratis.'

This law directs all assessors to return to the county commissioners of the several counties, the names of certain children whose parents are unable to pay for their education, for the purpose of being schooled at the expense of the respective counties. Under this law, the city and county of Philadelphia paid twenty-two thousand two hundred and twenty-nine dollars last year, for the education of about three thousand poor children. If then this district, which contains one-eighth of the population of the state, and probably one-fourth of the poor, paid \$22,229; the whole cost for this object throughout the commonwealth, must have been for a *single* YEAR, \$88,916.

N. B. By a law passed last session, it is supposed that the poor children of the district composed of the city and county of Philadelphia, will be much better taught on the Lancastrian system, and at far less cost; and as a beginning, a *model* school-house is now building, calculated to contain one thousand scholars, which it is expected will be opened next fall.

It appears by the foregoing statement, that, the commonwealth has granted to colleges and academies, three hundred and twenty-seven thousand, three hundred and thirty-three dollars, thirty-three cents, while the public have borne an expense, annually, of eighty-eight thousand, nine hundred and sixteen dollars, for the education of the poor. If to these we add the vast sums paid by the rich for the schooling of their children, we shall see that money has by no means been sparingly bestowed in Pennsylvania, upon this important object. I know that some states have dedicated inviolably, very large sums to public instruction, and that both New York and Connecticut have distinguished themselves by the most liberal appropriations. The latter state *especially*, has devoted to this hallowed purpose the whole sum received for her reserved lands in Ohio, amounting now to more than sixteen hundred thousand dollars, with which she gives an excellent English school education to above twenty thousand children annually. Here is a noble example for our own and every other state to follow. Pennsylvania has a good disposition to do it, and will shortly, it is to be hoped, not only emulate, but rise superior to her neighbours in reverential affection for these sacred institutions.*

* At the *first* anniversary of the Philadelphia Sunday and Adult School Union, which occurred in June last, a report was made, stating the progress and present situation of 43 schools, with 556 teachers, and 5970 pupils, gratuitously instructed once a week in this city.

Before I proceed to offer a view of the finances of the state, let me be permitted to exhibit, under one head, the aggregate expenditure both by the public and incorporated companies, which has been made, according to my statement, on the roads, bridges, rivers and schools, &c. It will stand thus:

By the Legislature, as shown in a former page,	-	-	-	2,437,199	
By ditto, for colleges, academies, &c.				327,333	33
					<hr/> 2,764,532 33
By the counties for public schools, in full operation about seven* years, at 88,000 dollars per annum,				616,000	
Turnpike roads by individuals, (exclusive of state contributions)	-	-	-	-	5,000,000
Bridges by individuals,			ditto		1,298,500
Cash expended by the two canal companies between the Susquehanna and Delaware, previous to their union,	-	-	-	500,000	
Old and new subscription to the Schuylkill navigation, exclusive of state contribution,	-	-	-	400,000	
Conewago falls, both sides,			-	100,000	
The state contributed to the west side 14,000 dollars; the rest was paid by individuals.					
†River Lehigh, for its completion to the great falls,	-	-	-	50,000	
Lottery granted to the Union Canal company to raise the sum of			-	340,000	
Chesapeake Canal and Transporting company,	-	-	-	110,000	
Loans, <i>by the State</i> , to individuals and companies; some without interest and some at 3 per cent, to aid manufacturers, &c.	-	-	-	61,000	
					<hr/> 1,611,000
					<hr/> \$11,290,032 33

Making, in round numbers, *eleven millions* expended on objects of public utility in this state, principally within seven years!

Can it now be said, with justice, that Pennsylvania has done nothing? May I not, indeed, be allowed to ask whether any one state in the union has done more? It must be ignorance or slander to continue to reproach this Commonwealth with inertness and lan-

* The law was passed in 1809; but probably did not operate extensively for two years.

† This is only for a downward navigation from the Great falls to Lausanne. Should the State require a lock navigation, it must be made, and the cost will of course be very much augmented.

guour. Her spirited exertions are deserving, on the contrary, of every praise; and there is the best founded hope that she will, by an extension of her public bounties and private contributions, continue to merit that praise. Pennsylvania stationary in her improvements! Let those who knew the interior of this state ten years ago, examine it now, and see whether she has been neglectful of her advancement? whether she has been left by her sister states at so disgraceful a distance? or whether she is not, in solid and durable works, equal to any of them? Her expenditures have averaged, principally, during seven years, including colleges, &c. by the foregoing statement:

For disbursements on the part of the Commonwealth, the sum of 488,000 dollars per annum; on the part of individuals, the sum of 1,117,000 dollars; making a yearly appropriation of one million six hundred and five thousand dollars; and if the war expenditure be added, which in all probability would have been thus applied, had we been at peace,—a war expenditure, as I have stated, of 983,000 dollars, we should have appropriated, per annum, about one million seven hundred thousand dollars, for seven years consecutively; which would have furnished as much money for general improvement throughout the state, as it would have been prudent or practicable to have expended, without interfering with the accustomed and settled prices of labour.

FINANCES.*

The funds of the state consist of

1. Lands *unsold*, the property of the state.
2. Principal, interest, and fees due on lands sold.
3. Bank and other stock.
4. Loans to individuals and companies.
5. Debts due on balances settled.

ESTIMATE.

Lands unsold, estimated worth	\$100,000
†Principal, interest, and fees due on lands sold,	1,600,000
Lots and lands reserved for public uses,	100,000
Liens on lands in the seventeen townships of Luzerne county, under the act of 4th April, 1799,	50,000
	<hr/> 1,850,000

BANK AND OTHER STOCK.

Bank of Pennsylvania, first cost,	\$1,500,000
Bank of Philadelphia,	523,300
	<hr/> \$2,023,300

* See report of the committee of ways and means to the Legislature last winter.

† Mr. W. J. Duane estimates this debt, according to the number of tracts of land (52,782) which remained to be paid for in the year 1809, at \$3,798,589. The estimate which I have taken from the committee of ways and means, is the very lowest: this item might with great safety be put at two millions of dollars.

Amount brought over,	-	-	-	\$1,850,000
Amount brought over,	-	-	2,023,300	
Farmers and Mechanics,	-	-	85,400	
Stock in roads, (paid to December, 1817,)			404,065	
Stock in bridge, and stock in navigation, ditto,			285,000	
Premium which could be now obtained on bank stock,	-	-	770,000	
			<hr/>	
			\$3,567,765	
Loans to individuals and companies,			61,295	
Debts due on balances settled in the auditor general's office,	-	-	256,599	3,885,659
				<hr/>
				5,735,659
				<hr/>

The revenue of the state may be estimated thus:*

1. Auction duties,	-	-	\$78,926	13
2. Dividends on bank and other stock,	-	-	200,571	00
3. Lands and fees on lands,	-	-	120,000	00

N. B. This item is carried out in the auditor's report \$62,661 70; which is the sum received by him in 1817; but as much larger payments are made some years, and as the debt due to the state on that head is at least two millions, I have taken the interest of that sum as a fair item of revenue; for if the whole should not be paid into the treasury annually, the deficiency will be carried to the credit of the Commonwealth, as an increase of its capital.

4. Tax on banks,	-	-	29,535	23
5. Tavern licenses, &c.	-	-	25,692	38
6. Miscellaneous,	-	-	1,450	00
7. Tax on certain offices,	-	-	8,716	67
8. Court fines,	-	-	2,019	45
9. Fees of the office of the secretary of the Common- wealth,	-	-	968	45

\$467,779 31

The expenses of government are:†

1. Legislative department,	\$83,969	10
2. Executive ditto,	11,911	03
3. Judiciary ditto,	52,747	10
4. Treasury ditto,	5,448	49
5. Auditor General's department,	4,025	13

158,100 85

* Auditor General's Report on the finances for 1817.

† I will mention here, that Pennsylvania, from her foundation, has ever maintained the highest credit in money matters. During the colonial government, she often issued paper money, and it ever passed at par: her credit is now unbounded: she has always been jealous of it, and will never run the least hazard of putting it in jeopardy.

Amount of revenue brought up,	-	\$467,779 31
Amount of expenses brought over,	158,100 85	
6. Secretary Land ditto, -	5,954 12	
7. Surveyor General's ditto, -	5,955 78	
8. Contingent expenses, general purposes,	4,090 44	
9. Conveying convicts, -	8,993 91	
10. Miscellaneous expenses, -	46,308 23	
11. Militia expenses, -	10,000 00	
N. B. This item has heretofore been as high as \$34,240 61; but by a law passed the last session, it will be reduced probably to less than I have put it at.		
12. Pennsylvania claimants,	21,837 9	
13. Pension to old soldiers, -	18,696 46	
	<hr/>	279,936 88
		<hr/>
		\$187,842 43

By the foregoing statement, it appears that Pennsylvania possesses a clear estate of *five millions, seven hundred and thirty-five thousand six hundred and fifty-nine dollars*, and an excess of revenue over and above the generous supply of all her regular expenses, of more than *one hundred and eighty-seven thousand dollars!* She owes nothing, except the unpaid balance of the appropriations for internal improvement, which is in course of payment; she lays no taxes upon real estate, or upon any thing except the few trifles enumerated; and these are imposed on the Banks *in lieu of a bonus*, and on the taverns, as a municipal regulation and salutary restraint upon the abuse of unlicensed publicans. The people of this Commonwealth must, at all times, be highly gratified to see their treasury so rich; but peculiarly so at a moment when circumstances call aloud for generous appropriations, in order to convert to immediate use, the vast geographical advantages which Nature has so bountifully bestowed upon us. When we associate the labours of our rulers with the skill of patriotic companies, liberally incorporated, and sustain their enterprize and exertions by the powerful resources of the state, every physical property will soon unfold itself, and be brought into early operation. Let Pennsylvania put forth her full energy; let her go to work with entire zeal, and no jealous neighbour will long presume to boast of superior progress;—a vaunting, which is not at the present moment founded on fact, but for which there would not then be the smallest pretence.

A considerable part of the funds of the state, as may be seen, is invested in bank stock; a stock, which produced last year more than two-thirds of the whole of the expenses of government. The members of the Legislature, for several years past, seeing this sum so advantageously invested, and so certain (as they supposed) of its continuing to yield future dividends of eight and ten per cent.

have pretty generally evinced a partiality for it. I think this partiality short-sighted. The stock, it is true, has done well heretofore; but our banks are numerous, and surrounded by rivals; some of them of gigantic stature, and they may soon be compelled to reduce these dividends to a less sum than six per cent. But as the revenue of the state amounts to more than its expenses, a certain amount of this bank stock might be sold at its present market price (forty per cent. advance for the major part) without lessening the current premium; and thus form a fund in aid of internal improvement, highly advantageous to the state.

Any appropriation of that part of this stock thus sold, for the benefit of canals and rivers, or even roads, would be extremely serviceable: in the former more especially; where, if for years it should not bring a full interest, it would tend to unfetter the geographical difficulties of our rivers, and mingle the waters of one distant stream with those of another, to the vast profit of the countries by which they are washed; and to the durable, and even early, advantage of the funds thus laid out. The day is fast approaching, I fondly hope, when this doctrine will experimentally explain itself, and when we shall see our rulers, neither squeamish about placing their money in such stock, though *only prospectively* beneficial, nor even backward in *taxing*, if expedient, the people of the Commonwealth, to procure *funds* for so profitable an investment.

INTERNAL REGULATIONS.

The view I am taking of Pennsylvania in this little work, is cursory and superficial. An exposition of its political economy, would be much beyond my strength. All that I shall presume to do, will be to examine a few additional subjects, in the same imperfect manner I have done the preceding. What I write is a mere sketch. The full development of these topics must be left to an abler pen.

One step of primary importance towards understanding the situation of the state, has already been taken. A general survey, under a late law, has been made of each county, and separate *county* draughts, executed for the most part with great topographical elegance and accuracy, are to be seen now at the Surveyor General's office. A collection of these into one volume, if published with care, would form a complete, detailed, and desirable atlas of Pennsylvania. When surveyors were appointed to execute this work, the Secretary of the Commonwealth wrote to each one, a circular letter, under date May 19, 1817, requiring information in relation to such alterations or additions as had taken place in each county; likewise such geographical information generally with respect to the rivers, towns, and mountains, as the surveyor might be able to obtain.

These injunctions have been fulfilled, with more or less ability, according to the talents of the respective surveyors. In relation to the counties of Luzerne, Susquehanna, Northampton, and Le-

high, these requisitions have been satisfactorily obeyed. Mr. Isaac Chapman in a manuscript work, of which I have a copy, has noted with several statistical particulars, the towns and villages of that district, as well as the names and elevations of the mountains; character and description of the rivers and creeks, accompanied with hints of the future usefulness of these waters for internal navigation. This is a creditable report as far as it goes. But it is to be regretted that the law did not enjoin upon the governor to select men for this duty, who were capable of adding to their surveys a more circumstantial report. What a fine opportunity offered, in forming this grand ichnographic view of the state, for obtaining a full and official return, not only of the face of the country, but of the quality of its soil and agriculture, the nature of its forests, plants, zoology, Indian antiquities, with historical notices of the expelled tribes—Mineralogy, mineral waters, natural curiosities, manufactures, state of society, German and English education, which counties increase by new comers, and which are neglected by emigrants, turnpike roads, bridges, banks, &c. with many other important particulars, and, above all, a very careful notice of every navigable stream, with the minutest details of its capabilities for those grand and never to be forgotten purposes of inland water commerce. Such labours as these would have been of lasting use, and men abound in the state, with every capacity necessary for their accomplishment. Reports thus constructed, would have formed a body of geographic, statistic, and scientific information, which, superadded to the topographic surveys already executed, must have been a treasure to the political economist and statesman. But in the absence of these more elaborate reports, let us rejoice at the possession of those which the law of 1816-17 has procured us, and which are both creditable and advantageous to the Commonwealth.

For the protection of morals, promotion of virtue, and the advancement of the well-being of its inhabitants, Pennsylvania has enacted laws both numerous and efficient. For the punishment of vice, without unnecessary cruelty, or an indecent exhibition of the culprit, her code is ample and salutary. She is now engaged in perfecting a system of penitentiary punishment, which she originated, and which she has had the satisfaction to see adopted in both hemispheres. By a law of the last session, sixty thousand dollars were voted for the construction of a prison at Pittsburg, entirely upon the plan of solitary confinement. Each prisoner will have a cell, 8 feet by 11, with a fire-place, door, window, &c. and in front a small yard of the same dimensions. The building is to be in the form of a circular castellated fortress, with a penopticon or look-out tower in the middle, from which will diverge eight walls, so as to divide the grand centre into eight compartments, which are again sub-divided into twenty-five cells, and so constructed as to prevent, in case of rebellion, more than twenty-five convicts combining or uniting at one time for the purpose of es-

caping. It is to the ingenuity of Mr. Strickland, the architect, that we are indebted for the draught of this building, which was executed under the inspection, and by direction of Thomas Bradford, jun. Esq. whose disinterested zeal and useful labours on this occasion, do him great honour. That gentleman, as well as all those who have observed the effects of solitude on the mind and on the behaviour of the convict, is intimately convinced of its never failing effect in subduing, after a short seclusion from the society of man, the most impetuous temper. What then may we expect after an absence of two or three years from that society? It is supposed that the worst dispositions will be tamed, and the basest habits corrected. The experiment is worth trying. At present, eighteen or twenty miscreants are crowded together, in one bed-room, where, by a constant recurrence to the events of their past lives, the vilest are confirmed in their wickedness, and the less hardened become incorrigible. A separation is essential to the health of their bodies and their minds; for solitude, with proper superintendence, will give corporeal cleanliness; solitude with time, will frighten the criminal from sin! This law provides likewise for the sale of the Philadelphia penitentiary, and gives authority to build another upon the foregoing principle.

Pennsylvania possesses several valuable arsenals, well stocked with munitions of war.* Its inspection laws yields to none, and have given to the flour, whiskey, butter, beef, and other objects of exportation, a credit and character abroad, which, under legislative regulations, have become highly useful to the commerce of Philadelphia; and her election laws will gain by a comparison with those of any state in the union. Indeed they do not seem susceptible of improvement; for whether the rights of the citizen, the expedition and facility of voting, correctness, and impartiality of scrutiny and checks against imposition, be considered, they seem to possess provisions as ample as efficacious. In one and the same day, from one appointed hour to another, the suffrage of every voter who chooses to attend the polls, is received throughout the state, the judges and inspectors prepare their official return, and the votes are all boxed up and sealed, to be ready for examination in case a scrutiny should be asked. This mode is little susceptible of abuse, and it is well calculated to avoid the uproar and violence of mobs. The consequence is, that Pennsylvanian elections are usually conducted with little noise and no bloodshed. In short, in a way no less remarkable for its calmness than for its fairness. Some of our neighbouring states might be benefitted by an adoption of these rational and well-tried election laws.

The philanthropy too of the government has been often exercised in revising the poor laws; contributing to hospitals, at home and elsewhere, and by granting relief to districts, assailed by inci-

* The state arsenal at Philadelphia is said to contain half a million of dollars worth of property.

dental calamities. Thus it was she gave ten thousand dollars to Philadelphia after one of her yellow fevers; thus it was she sent fifteen thousand dollars to Savannah, to sooth the misfortunes of a general conflagration; and thus it is, as I have already mentioned, she has bestowed lately large donations on two of our own suffering counties, and on the hospital of New Orleans.

Good turnpike roads abound, as I have shown; but if the traveler has occasion to use the other roads of the state, he will find that the laws provide for their reparation, for the erection of mile stones, and direction posts: laws which are in general very creditably executed.

One agricultural society has been incorporated, and many others, if necessary, could easily obtain the privileges of a charter. Nor is the Legislature indisposed to give more solid proofs of her bounty. At the end of the last session, a petition was presented by the agricultural society of Philadelphia, asking for a grant of money to purchase a pattern farm of one hundred acres. It came too late to be acted upon; but having been very favourably received, it was referred to the early attention of the next Legislature. The following resolution and remarks from the committee, which I extract from their report, will show the general sentiment of the house.

*“The committee are of opinion, that the improvement in agriculture is well entitled to the patronage of the Legislature. This state is an agricultural one, and its sources of wealth and prosperity are to be found in the tillers of the soil. Not only do we find there those sources, but in the life and habits of the husbandman are we to look for exemplary morals, which constitute the safeguard of republican institutions. Commerce and manufactures derive their aliment from the earth, and in order that they may be encouraged and thrive, the cultivation of the soil requires especial care and regard.

“The plan proposed by the agricultural society may be eminently useful to the advancement of husbandry, and claims the patronage of a legislature, representing an agricultural people.

“This patronage may have a tendency to raise the cultivator of the soil to his just rank in the community, and instead of our youth resorting to the learned professions for honour, advancement, and reward, by a just and liberal encouragement to agriculture, their minds may be directed to this source of enjoyment, of independence, of tranquillity and of wealth.

“Considering then the importance of the subject, and that the legislature cannot better dispose of its funds than by encouraging agricultural improvements, and enlarging the sphere of human knowledge, the committee submit the following resolution:

“Resolved, that _____ dollars be appropriated for the purchase of a farm and agricultural implements, to be placed under

* Journal of the House of Representative for 1817 8, page 637.

the management and direction of the Agricultural Society of Philadelphia.

“And on motion,

“Said report was read a second time, and the resolution there-to attached, was considered and adopted.”

There is strong reason to hope, that next year money will be provided by the state for this highly useful object, and a farm purchased, where experiments in agriculture may be made publicly, for the public good; “for facts, which are merely told, produce a cold impression, compared with those which are presented to the eye.”

Unincorporated agricultural societies are becoming numerous in this and other states, very much to the profit of the community; and while I am upon this subject, I cannot deny myself the pleasure of paying to the Hon. Richard Peters, that tribute of praise, which his example, his writings, and unwearied labours, so justly entitle him to. Founder of the Blockley and Merriam Society, of which he has been thirty years president, and at the head of the Philadelphia agricultural society, this very excellent rural economist, has, by his zeal, intelligence, and address, spread throughout America every new discovery in the art of tillage. The four volumes of the Philadelphia society, compiled and composed in a great proportion by himself; his communications in the daily papers, and correspondence with the British societies, have awakened a curiosity, and created an avidity for books, upon this interesting subject, which have led to the formation of libraries in the interior, that cannot fail to dissipate prejudice, correct bad habits, and introduce new and approved systems, to the incalculable advantage of the immediate neighbourhood in which they are established, and of the nation at large. Indeed, those benefits have been already extensively felt. The cultivation of artificial grasses, scarcely known in Pennsylvania thirty years ago, aided by that powerful stimulus gypsum, which Judge Peters first brought into notice here, has trebled the value of our farms, and added greatly to the general stock of wealth. If he who makes two spears of grass grow, where only one grew before, is deserving of praise, how much do we owe to the man who has taught us to cover our fields with luxuriant clover, instead of the pestilential weeds which occupied them in our former fallows. The Hon. Judge Peters has done this, both by precept and by practice.

A petition from the Philosophical society, asking for a grant of a few thousand dollars, met with the most cordial reception in the senate, and nothing but the hurry of business, at the late period of its arrival, prevented its being acted upon. It was referred to the early and favourable notice of the next legislature.

Some of my constituents suppose, with great injustice, I think, that there is a disinclination in the western section of the state to serve the eastern. During the four months which I sat in the senate, I saw no signs of such a disposition—no bad temper upon

the subject—nothing in the least hostile to Philadelphia. On the contrary, one transmontane gentleman, alike distinguished for his influence and intelligence, and who resides at the extreme west of the state, gave with much patience, his time and his talents in aid and support of the Lehigh bill; which is to all intent and purposes an Eastern bill; and by the success or defeat of which he could not have been affected in the most remote manner; since its object is to enable Messrs. White and Co. to open the navigation of that branch of the Delaware up to the coal mines, in order to supply Philadelphia with fossil-fuel; and the gentleman to whom I allude, represents the counties of Butler and Beaver, beyond the Alleghany mountains. No jealousy, no ill will was shown towards this city; nor was there the slightest difficulty to obtain any local laws, even for the exclusive advantage of our district, whenever its representatives were unanimously disposed to support such a law. If they differed among themselves, the gentlemen from the west and elsewhere, exercised their judgments, as they were bound to do, and sided with which ever of our own members they thought right.

The happiness I feel in testifying to the good disposition which so generally prevails, to labour assiduously for the perfection of the internal polity of the commonwealth, is mingled with one regret, and that is *an attempt*, howbeit, heretofore futile, to disturb the titles of our large land-holders. Unjust and impolitic projects, are frequently offered for the consideration of the legislature, that tend to weaken the security which the laws should in every event vouchsafe to the land-holder. They protract the settlement of the state; they spread unfavourable reports of our polity and of our justice; they taint that reputation, for the protection of property, (even when not enacted into laws) which we should be anxious to preserve pure and sound, and ever sustain as the “sheet anchor” of the social compact.

New York, in this respect, is more fortunate. In that state no uneasiness ever exists respecting land titles; and she feels the benefit of it. Her laws upon that delicate subject, are immutable.

In Pennsylvania these projectors have never yet risen to a majority; and I heartily pray for the honour of the state that they never may;—never, I hope, shall we witness the prostration of that sacred barrier which protects property, a protection which it is the boast of every American constitution to extend to us, even to our uttermost farthing, whether it consists of money or of acres; whether it be invested in the marble walls of a palace, or in the wild abode of the buffalo and bear.

I shall here close my observations upon what the state has already done. Brief as my notices have been, I hope enough has been said to disprove the assertions so often and so injuriously made, that we are idle, indifferent, stationary. May I hope, too, that I have exhibited a sketch creditable to Pennsylvania. Her past exertions are but an earnest, I trust, of her desire to extend

them. She has the means in her strong-box, and God in his kindness has opened to her a capacious field. Animated by the same spirit, and possessed of increased resources, she will continue, no doubt, to scatter from her fruitful hand, such benefits on her people, as a parental and impartial policy requires.

Before I proceed to the second point I proposed to discuss, namely, "to show the superior situation of Philadelphia, geographically considered, for the attraction of the great and increasing trade of the countries bordering on the Susquehanna, the Lakes, and the Western rivers," it may be proper, perhaps, to lay before the reader, a brief account of the great use made of canals and improved river-navigation in other parts of the world; especially as it will be my endeavour to prove that the future prosperity of Philadelphia and the state, depend upon a proper attention being given to those important objects.

Inland navigation in all civilized countries, has been from time immemorial a principal source of national wealth. No great empire can advantageously interchange its manufactures and produce without it; and without such an interchange, it cannot become rich. By inland navigation the price of carriage is greatly reduced, and every article, either of luxury or of first necessity, is conveyed to market in much greater abundance, and at much less cost. Districts but thinly inhabited soon become populous, because it brings a market to every man's door, and those treasures in soil, wood, and minerals, which lay useless before, are brought into activity by its means. Every thing of worth receives its proper development; one section of the country forms an intimate commercial connexion with the other, habits are assimilated, political opinions harmonized, local prejudices dissipated, and one national feeling is made to pervade every part of the empire.

While war assails the commerce of the ocean, every thing moves in the interior with perfect security. Indeed, on those occasions, internal trade becomes still more active, and compensates in a great degree for the loss of foreign traffic. Thus it is that China subsists her vast population without extrinsic aid; and thus it was that France supported, in a good measure, the burthens of the last long war. England too, although assisted by an extensive foreign trade, must have sunk under the weight of her enormous taxes, if her long line of canals, which have been made to penetrate every part of the kingdom, at an expense of thirty millions sterling, had not given the greatest facilities to the vast commercial operations of that ingenious and industrious people. Neither of these countries, nor any one in the eastern hemisphere, offers any natural advantages to compare with our own, for inland navigation; and if inland navigation has done so much elsewhere, where nature has been avaricious of her favours; how much may we expect from our exertions in Pennsylvania, where she has so lavishly distributed them?

* All canals may be considered as so many roads of a certain kind, on which one horse will draw as much as thirty horses do on the ordinary turnpike roads, or on which one man alone will transport as many goods as three men and eighteen horses usually do on common roads. This is meant only to apply to slack water navigation; on rivers, transportation cannot be so unequal, although the difference is very great. This advantage over roads is strongly illustrated in districts where there are saw-mills without good roads. There, it will be found, that the work of a single horse, particularly in a mountainous country, will enhance the price of boards in a distance of twelve miles, beyond that of a water transportation of twelve hundred.

In this country, where land is so abundant, the waste of it by canals cannot be a serious inconvenience; yet, as it may alarm some people who are unacquainted with the small space occupied by these artificial rivers, I will inform them, that *one mile* of the duke of Bridgewater's navigation takes up only *one acre and an half* of land.†

In the brief view I propose to take of countries, which have been conspicuously improved by canal and river navigation, I shall begin with

CHINA.

‡ That great empire has scarcely a town, or even a village, which has not the advantage either of an arm of the sea, a navigable river, or a canal; by which means navigation is rendered so common, that in some districts there are almost as many people live on the water as the land.

The great canal of that country is one of the wonders of art. It runs from north to south, the whole length of the empire, taking advantage of the great and small rivers, wherever they can be used, and extends 1800 miles, exclusive of its branches. It has often been travelled from Canton to Pekin, which is 825 miles. ^{by} Its breadth is about fifty feet, and its depth nine feet. This canal ^{Europe} passes through, or near, forty-one large cities; it has seventy-five vast sluices to keep up the water, and pass the vessels and boats, where the ground will not admit of sufficient depth of channel, besides several thousand draw and other bridges. Innumerable canals are cut from this main trunk, and the whole empire is kept in a state of activity and abundance by their means.

These canals are cut through any kind of property, gardens, plantations, or pleasure grounds; not even the gardens of the emperor, or any of his governors, are exempted: but when the work arrives at the garden, or pleasure ground, the governor, or even the emperor himself, digs the first spade of earth, and pronounces, with an audible voice, "This is to let those of inferior situations know, that no private pleasure shall obstruct the public good." Ir-

* Phillips' General History of Inland Navigation. † The same. ‡ The same.

rigation, for agricultural purposes, is extended by means of these canals over millions of acres; thus helping to fructify those fields, the produce of which they serve afterwards to convey to a distant market.

HINDOOSTAN, OR BENGAL.

It is supposed that the canals, and the river Ganges, in Hindoostan, employ 30,000 boatmen, conveying salt and food, as well as merchandize, for ten millions of people, who inhabit on and near their borders.

RUSSIA.

* Peter the Great, having observed, when he travelled through Holland, that the industrious inhabitants of that country had, by diligent perseverance, and principally by means of canals, raised a small tract of marshy land into a populous and powerful state, formed the plan of an inland navigation for conveying the rich commodities of Persia to his new city of St. Petersburg.

That prince lived to see this great work completed: it has been improved by his successors, and the following sketch of what has been, from his time to the present, effected in Russia, will show the attention there paid to the internal commerce of that vast country.

Inland navigation is carried to such an extent there, that it is possible to convey goods by water *four thousand four hundred and seventy-two miles*, from the frontiers of China to St. Petersburg, with an interruption of only about sixty miles; and from Astracan, on the Caspian sea, to the same capital, through a space of *one thousand four hundred and thirty-four miles*. This last great work was brought to its present perfect state by Catherine II, and by its means there is an easy and rapid communication between the Baltic and Caspian seas, which are united by noble canals, which mingle the waters of the Neva with those of the Wolga and Twertza.

As it is proposed to improve the navigation of some of our rivers by *artificial freshets*, that is to say, by the retention of large bodies of water, where the springs are plentiful, in order to be discharged at stated periods, in dry seasons, into the shallow sections of either river or canal, it may be useful to state here, that that method is pursued in Russia with the greatest success.

Several rivulets falling into the Masta, are confined by locks, which being opened successively as the vessels are passing, fill the river, and render the shallows navigable; and being again closed, hold perpetual reservoirs of water for the same purpose. In spring, vessels which navigate these shallows, may be allowed to draw two feet and a half water, in summer only twenty-six inches. Four or five thousand vessels pass through these canals annually; a strong proof of the amazing internal trade of Russia by water convey-

* Phillips' General History of Inland Navigation.

ance; particularly as this exhibits the commerce of one quarter of that country only.

HOLLAND.

The Dutch, by their innumerable canals, have turned a morass into beautiful meadow grounds, and for commerce, riches, and population, could, a short time back, vie with any country on the face of the earth, in proportion to its size, not even excepting China.

* One-third, at least, of this country, has been gained from the sea, and is intersected by canals in every direction, which may be compared, for number and size, to public roads and highways. On these canals, boats, pleasure-barges, and other vessels, are continually conveying commodities, for consumption or exportation, from the interior of the country to their great cities and towns. By them also a prodigious inland trade is carried on with France, Flanders, and Germany. When the canals are frozen over, they travel on them with skaits, and perform long journeys in a very short time; while heavy burdens are conveyed in carts and sleds, which are then as much used on the canals as in the streets.

The yearly profits produced by these canals are almost beyond belief; it being ascertained that in some districts they amount to near three thousand dollars (625*l.* sterling) per mile, the square surface of which mile does not exceed two acres of ground; a profit so amazing, that it is no wonder other nations should attempt these invaluable improvements; improvements, which, when introduced into Pennsylvania, cannot fail of giving to those who embark their money in them, dividends the most satisfactory, as I shall endeavour to show in the course of my remarks upon our rivers.

FRANCE.

France has very many canals of the greatest usefulness and extent. They serve to connect large rivers in the north, west, and south of that fine kingdom. The canals which were finished and in full operation before the revolution, measured in length one thousand nine hundred and thirty-nine English miles,* (858,000 toises.) Since that time many have been added by Napoleon, and their extent is of course very much increased. The limits of this pamphlet will not allow me to notice any of them, except that of Languedoc.

This great work, forming a junction between the ocean and the Mediterranean, was begun in 1666, and finished in 1681. It establishes a ready communication between Bordeaux, on the Garonne, and Cette, on the Mediterranean. The canal itself extends from Narbonne to Toulouse, and is provided, at proper intervals, with one hundred and fourteen locks and sluices. In some places it is conveyed by aqueducts over bridges of incredible height and strength, which give passages under them to other rivers.

* Phillips' General History of Inland Navigation.

Not far from Beziers, are eight locks, which form a grand and regular cascade, 960 feet long, and by means of which the vessels cross the river Orb, and continuing their voyage on the canal, pass several towns on their way to the Garonne. At St. Ferriol, near the Black mountains, the famous engineer *Riguet*, constructed a reservoir to supply the canal, containing 595 acres of water, which is first embanked, and then the embankment walled round with free-stone, between two rocky mountains. Under this dam runs a vaulted arch, or sewer, reaching to the main wall, where three large cocks of cast brass are turned, opened and shut by iron bars; these cocks discharge the water through their mouths, which are as large as a man's body, into the aqueducts, and the basin at Narouse, which is the head of the navigation. The length of this fine canal is 192 miles, (64 French leagues); its breadth, including towing-paths, 144 feet; its depth 6 feet. Its cost, in the days of Louis XIV, something more than two millions five hundred thousand dollars, (thirteen millions of livres); of which sum the king contributed seven millions of livres, and the province of Languedoc the remainder.* The expense, great as it was, is nothing compared with its utility.

By the king's munificence, *Riguet*,† who planned and executed this work, was presented, for himself and heirs, with the whole income arising from the royal proportion of the expense.

The summit level of this canal is at Narouse, and is about 600 feet above the two waters, from whence the ground has almost one continued descent on each side. On this spot, as was before observed, *Riguet* made his basin, and collected his waters, which he brought from an adjoining mountain by an aqueduct fifteen miles long, which contains between 5 and 6,000 cubic inches; and this stream being distributed to the two canals on both sides of the level, forms, in every part, a body of water of above six millions of cubic feet.

SPAIN.

Spain must not detain us long. She has fine rivers, and fine soil, and would flourish as much as any country in Europe, if she had

* The old government of France partook a good deal of the federative form. Very many of the provinces retained extensive privileges, laws, and customs, which could not be controlled or infringed by the crown; they likewise executed, in their provincial capacity, and by their own free will, such works as the representatives of the province, assembled *en états*, or in a legislative character, thought proper to order. When I passed through Languedoc, in 1787, very many improvements in roads, bridges, &c. were making under the *state* authority; among others, there were digging, at the expense of the province, a branch from the main trunk of the canal to the town of Carcassonne, another to the town of Narbonne; and a new basin was constructing, called the reservoir of *Empie*. These are valuable examples for Pennsylvania to follow.

† We have seen in America, one of the sons of his successor, who was proprietor of this canal, fighting under the immortal Washington, in general Rochambeau's army. His family was immensely rich, owing to the tolls received on the canal. His name was *Caraman*.

a good government;—a government that knew how to improve the great advantages which nature has bestowed on her. She has made some attempts, however, to facilitate her inland navigation; but most of them have proved abortive, for want of funds and public spirit.

This kingdom, which does not contain, at the most, more than ten millions of inhabitants, might, if properly cultivated, and otherwise improved, easily feed and clothe three times that number. It contained in the time of the Goths and Moors, between twenty and thirty millions of people.

ENGLAND.

“There is a period,” says Dr. Aikin, in his description of the country around Manchester, “in which the mind of man, roused to attend to any particular subject, whether of art, science, or regulation, is irresistibly impelled to proceed in its career; and this crisis was now (1795) arrived, with respect to the internal communication between the different parts of this kingdom (England) by means of navigable canals.”

May we hope that this remark will apply at the present day to Pennsylvania.—That spirit of *canaling*, which seized so universally upon England about that time, was the source of immense wealth to her in an hour of great trial. We, in America, must often turn our eyes upon the old countries of Europe, and particularly towards that celebrated island from whence we sprang, for examples and instruction in those great means which lead to national wealth and private comfort. It is there; it is especially amongst those enterprizing islanders, that we shall see industry and ingenuity go hand in hand; that we shall find an exuberance of talent and of riches ever at command to aid the endeavours of well-directed labour; and there, too, an enlightened legislature gives with promptitude the sanction of law to these conjoined efforts. More than twelve hundred acts for the improvement of England have passed in parliament within fifteen years. Roads, rivers, canals—all have been perfected. Wagons, bearing ten tons weight, are now drawn along the smooth and level way, where mountains stood before; canals shoot their branches into every district, uniting, by four different routes, the north sea with the channels of Bristol and St. George, and bringing through their numberless ramifications, to ships of all nations, the rich product of the mine and of the loom; vivifying, enlivening, enriching every thing on its passage. Before these great works had been executed, and before the last war with France took place, England was rich; yet she could never have withstood the mightiness of that struggle without those resources which a continued attention to the improvement of her interior produced. Had she neglected these, she must have succumbed to the gigantic force which was arrayed against her on that momentous occasion.

To attempt to describe the prodigious number of canals now in use in Great Britain, would require a volume. Their general and acknowledged utility is so obvious to every person acquainted with that country, that I will confine myself to one or two observations in relation to them. The first is the introduction of coal and timber from districts where there was no demand for them, to those places where they were wanted; the second is the communication of sea ports lying on different seas, and the transport of goods from one to the other in time of war, without even exposing them to the dangers of the elements. By the happy combination of a most active commerce with the most perfect security which this system of inland navigation has given to England, we find it extending itself to every corner of the kingdom; "and the mind cannot but be impressed," says Dr. Aikin, "with magnificent ideas of the opulence, the spirit, and the enlarged views which characterize the commercial interest of this country. The town of Manchester, when the plans now under execution are finished, will probably enjoy more various water-communications than the most commercial town of the Low Countries has ever done. And instead of cutting them through level tracts, so as to make a wider ditch, its canals are carried over mountainous districts, where the sole method of avoiding the difficulties of steep ascent and descent, has been to bore through the very heart of hills, and navigate for miles within the bowels of the earth. At the beginning of the last century it was thought a most arduous task to make a *high road* practicable for carriages over the hills and moors which separate Yorkshire from Lancashire; and now they are pierced through by *three navigable canals!*"

From the glance we have taken at the principal European canals, let us turn our eyes for a moment to what has been done in our own country.

* The first with us are to the north, and on the *Merrimack*; a river which rises in the state of New-Hampshire, and falls into the sea at Newburyport, after a course of 180 miles. On this river, several canals, very difficult of execution, have been dug, and the waters generally improved, upon the plan now following on the Schuylkill. These canals and locks have been expensive; but are paying 6, 7, and 8 per cent., and are increasing fast in productiveness.

The Middlesex canal, which connects the river Merrimack with Boston, is 27 miles in length, 3 feet in depth, with banks one foot above the water. The width is generally 30 feet on the surface, and on the bottom 20 feet. The whole expense was five hundred and twenty thousand dollars.

This is the greatest work of the kind which has been completed in the United States. The ground was unfavourable, and the cost heavy. In order to open the canal,† it was necessary to dig in some

* See Dr. Sullivan's letter to New-York Commissioners.

† Gallatin's Report to Congress on Internal Improvement.

places to the depth of twenty feet, to cut through ledges of rocks, to fill up vallies and morasses, and to throw several aqueducts across the intervening rivers. All these obstacles have been overcome, and boats of 24 tons, 75 feet long, and 11 feet wide, can navigate the canal. Those of most general use are of smaller dimensions, and are drawn by two horses at the rate of three miles an hour. A raft of one mile in length, and containing eight hundred tons of timber, has been drawn by two oxen part of the way at the rate of one mile an hour. Common boats pass from one end of the canal to the other in twelve hours. The tolls, which, in 1807, did not exceed seventeen thousand dollars per annum, had risen, in 1817, to thirty-two thousand.

On the Potomac, at the *Great Falls*, a canal, one mile in length, 6 feet deep, and 25 wide, admits of boats passing down a fall of 76 feet, through five locks, which, after a short river navigation, re-enter another canal of the same dimensions, and two miles and an half in length, which brings them through three locks, by a descent of 37 feet, to tide water. These works, with others up that river, and on the Shenandoe, have cost large sums of money, and will eventually be the means of enriching the district about Washington, particularly when a finishing hand is put to them, and the great National Western Road is completed;—a road upon which all *Philadelphians* should look with peculiar watchfulness, as it is only seventy-two miles long, is constructed in a masterly style, and unites the Potomac, at Cumberland, with the Monongahala at Brownsville, and brings the city of Washington within a *rival* distance of the western waters: but more of this hereafter.

On *James River*, in Virginia, many improvements have been effected. One near the city of Richmond, for the purpose of transporting coal, although imperfect, has been useful and profitable, and cost 231,000 dollars.* The annual toll raised on fourteen thousand tons of country produce, and on two thousand coal-boats, have amounted to 16,750 dollars, (in the year 1807.) So that the company, eleven years ago, were enabled to make dividends of seven per cent. As the coal business has increased very much since, no doubt the tolls have given a proportional increase of dividends to the stockholders.

In *North Carolina* some important works in canaling have been finished, and others are now executing; but in *South Carolina* the improvement of the river Santee, or Catawba, has cost vast labour and much money. This river is now connected with Cooper river, which empties into the harbour of Charleston, and gives that port a water communication, at certain seasons of the year, with the back country, of three hundred miles and more. The canal which unites these two rivers, cost 650,667 dollars; and will, when made more permanent, and somewhat deeper, admit vessels which, on account of their draft of water, are now obliged to sail round the

* Gallatin's Report to Congress on Internal Improvement.

sea coast to Charleston; and in that event, the stockholders must receive good dividends. In 1807 the annual tolls were only thirteen thousand dollars.

The state of New-York, and our own state, as well as the state of Delaware, have each one or more unfinished canals; but they are not of sufficient magnitude to deserve a particular notice, except the vast canal which now occupies the attention of New-York, and which is, in every respect, a highly praise worthy undertaking; and will, *if ever finished, and put into successful operation*, immortalize its promoters. It is yet, however, in embryo; and as I mean to speak of it in a subsequent page, I will only mention it now as a great and glorious enterprize, furnishing an example of ardent zeal for internal improvement, which should be followed by every state possessed of fiscal and geographical means.

One other American canal, called Carondelet, and situate far to the south, ought here to be mentioned. It extends from the Bayou St. John, near New-Orleans, to the fortifications, or ditch of the city, and thereby opens an inland communication with Lake Pontchartrain.* A company was incorporated by the territorial legislature, for the purpose of repairing and improving that work, and of uniting the canal, by locks, with the Mississippi.† Independent of other advantages, this undertaking will enable government to transport munitions of war with facility, and use the same naval force for the defence of both the Mississippi and Lake Pontchartrain.

After this short view of the canals of Europe and of America, with the benefits which they invariably produce to the countries through which they pass, permit me to ask the very particular attention of the reader to the exposition, which I am now about entering upon, of the greatly superior *natural* advantages which Pennsylvania possesses over every one of those countries, and of the high degree of prosperity to which she and her commercial metropolis may arrive, by a proper harmony of effort, in the application of the small artificial aid required by nature for the full development of these extraordinary local benefits.

There are four routes by which Philadelphia *may* be united to the Susquehanna:

1. Between the great falls of the Lehigh and Wilkesbarre; a distance of only fourteen miles.
2. Between Lausanne, on the Lehigh, and Berwick; a distance of thirty miles.
3. Between the head waters of the Schuylkill and Berwick; and
4. By the grand canal, already partly dug, through the counties of Lebanon and Dauphin.

The Schuylkill, it is now taken for granted, will be soon rendered navigable, even for stean boats. This is an important link in the great western and northern chains; but the *golden link*—the

* A steam boat has lately been built in Philadelphia, which is intended to run between Mobile and New-Orleans, through this lake and canal.

† Gallatin's Report to Congress on Internal Improvement.

essential and high connecting part of that series of water-route, which is to convey so much wealth to Philadelphia, lies between Reading and Middletown. If we make a good channel by means of the waters of the Tulpahocken, which empty into the Schuylkill, and those of the Swatara, which empty into the Susquehanna, and thus reach that great river, we are for ever safe as a town. When we are once able to attract to our wharves the produce of the Susquehanna, we command the trade of waters, which meander through more than half the state; of waters which interlock on the north with lakes and rivers running into Ontario, and through the richest counties of the state of New-York; waters which have their sources and navigable tributary streams within fourteen miles of those that run west; and by whose junction we open to ourselves a vast and ever-increasing trade, not only with all the fair, full-grown and numerous daughters of the Mississippi, but with that "mother of rivers" herself, whose wide spread branches flow from every point of the compass, through hill and dale of inexhaustible riches; along mountains and deltas of every variety of soil; covering a country capable of sustaining two hundred millions of people! Between the Susquehanna and this vast territory only fourteen miles of land require to be cut, and if Philadelphia forms the link, which is to unite her to the Susquehanna, she may with ease and with cheapness, break down this fourteen mile barrier, and bring to the Delaware, by steam boats and other water carriages, a great part, if not all this inland trade; and she may do it, too, without the dread of a rival in New-York, Baltimore, or any other town. She will of necessity become the entrepot of this multifarious river-trade; her geographical position makes her such; she has nothing to do but to open the channel, and by the usual industry of commerce, appropriate to herself the countless treasures which will flow through it. A little more trouble, a little more cost, perfectly within her means, and Philadelphia can draw to her market likewise, the whole commerce of the great lakes above Erie, and to these northern, western, and north-western sources, she must look for her future prosperity. *If she does not make herself fully sensible of the necessity of opening these communications*, so easy, so certain, so advantageous, she will find herself, in a few years, deprived of her whole western trade;* indeed of every kind of internal traffic, except that of the narrow district between the Susquehanna and the Schuylkill; and thus limited, she must dwindle into a small town. But I have no such fears, no such anticipations. The share she has had in the expenditure of the eleven millions of dollars for public improvement; the alacrity with which she has lately filled up the subscription of half a million of dollars, for the perfection of the Schuylkill navigation, and her accustomed liberality in aiding objects of usefulness, are

* Owing to the new national road, from the Ohio to the Potomac, *toll free*, and the New-York canal.

so many guarantees for her perseverance in this all—all-important work.

In discussing this great topic, I make no apology when I repeat what I have already said; for it cannot be too often echoed and re-echoed in every quarter of the city. Other places around us are awake to its momentous consequences, and are vigilant, as I shall by and by show, in laying plans for the possession of part, or the whole of this great traffic. But it is a trade which geographically belongs to Philadelphia, and she has only to will it in order to have it. It is a trade with regions boundless in extent and in future riches, and calculated, if properly cherished, to raise our city to the very pinnacle of commercial grandeur;—to the very first rank among those which have distinguished themselves as conspicuous marts; it is calculated to stretch her limits even to the size of London, Canton, Calcutta; nay, beyond *that of any emporium on the GLOBE*. This is no enthusiastic flourish;—no unnatural effort of thought. It is a safe calculation, grounded upon the positive wants and presumable industry of the millions who are destined to occupy the fertile country, which must, in the event of a communication being opened, resort to Philadelphia, as to their nearest and most healthful and convenient market; a communication which will give to us advantages so stupendous, that in contemplating them, nature seems to outwork fancy. I will endeavour to illustrate this assertion. Suppose the Schuylkill united to the Susquehanna; the only dividing point between the Juniata branch and western branch of that river and the Allegheny, will then be a distance of about fourteen miles. After passing this, at the two places pointed out on the accompanying map, the whole western world is within our reach; and in order to show more distinctly the future destinies of Philadelphia, in the event of her extending these improvements to the Allegheny river, let us suppose the countries washed by the Ohio, Kentucky, Cumberland, Tennessee, Illinois, Wabash, Miami, Scioto, Muskingum, Mississippi from its junction with the Ohio to its source, Missouri, 2,800 miles up to the Great Falls, with its branches, the Osage, Kansas, Laplatte, Yellow Stone, &c. each from five to eight hundred miles long: let us suppose the countries, I say, through which these vast rivers pass, to be fully peopled, and possessed of only two outlets; the one situate far to the south, and almost within the tropic, surrounded by an atmosphere constantly heated, without elasticity or healthfulness, and ungenial to the hardy constitutions of the north; the other standing in the temperate zone, with a route safe, salubrious, and equally short; could there be any hesitation in the choice? the one leading to the sickly mouths of the Mississippi, the other to the verdant and wholesome banks of the Delaware? the first to New-Orleans; the second to Philadelphia. Could there be any hesitation in the choice, I ask? no, not for a moment!—and for less than one million of dollars, or about as much as we pay in municipal taxes every twenty months, the advantages derived from an

intercourse with that country as she *now stands*, and *prospectively* as she *will stand*, become our own.*

It must be repeated, that the future existence of Philadelphia, as a commercial town, depends upon her opening a *water-route* to the Susquehanna. This assertion ought to be considered by every house-owner,—every well-wisher to our city, in the form of a naked, incontrovertible truism; and thus aware of the importance of the fact, each one must see that Philadelphia will cease to flourish; that she will deteriorate and fall to ruin, if she does not apply the remedy; each one must see, that without that remedy the trade of the interior will flow into other channels, and leave her in a few years neither produce for her exports, nor buyers of her imports.

Under these circumstances, and with this serious and alarming aspect of the future fate of this city before us, can I do less than solemnly adjure its wealthy and intelligent inhabitants to set about adopting a remedy? The evils which have already attained us,

* The mind is lost in astonishment at the contemplation of the immensity of the scene which opens even beyond this; for when once arrived at the great Falls of the Missouri, there is a portage of only eighteen miles, over a level country, where again the navigation for large boats is practicable, and continues so for more than two hundred miles, until the source of that branch of the Missouri, called Jefferson's river, is attained. Here, and at the source of Madison river, the north and south forks of Lewis' river interlock. This last runs into the Columbia, which empties into the Pacific ocean. — —

But the Yellow Stone river offers the nearest route to the Rocky mountains. It cuts off the great Falls of Missouri, and has its waters quite as high to those of Lewis' river, as are those of Madison and Jefferson rivers; and if its navigation be not interrupted by falls, the distance from Philadelphia to the mouth of Columbia river, *in land cuts*, will be eighteen miles less than when the Missouri is ascended to its source, and will make the whole distance *of land to be removed* at the head waters of the rivers between Philadelphia and the mouth of the Columbia river, on the Pacific ocean, *thirty-eight miles!!* As thus:

From the Talpahocken, a branch of the Schuylkill, to the Quitapahilla, a branch of the Susquehanna,	-	-	-	4 miles.
From Poplar run, a branch of the Juniata, to the Little Conne- waugh, a branch of the Allegheny,	-	-	-	14
From the Yellow Stone River, a branch of the Missouri, to Lew- is' river, a branch of the Columbia,	-	-	-	20
				38 miles.

Colonel James Johnston has contracted with the war department, says a Cincinnati paper of June 16, to furnish rations for the troops to be stationed at the mouth of Yellow Stone river, 1800 miles up the Missouri. He has offered, or intends offering, to convey munitions of war, baggage, and provisions, to that point in *steam boats*. By that mode of conveyance, they will reach their place of destination in sixty days, that is to say, in one seventh the usual time, because by the common mode, they would not reach there before July or August, 1819.

This is a beginning. When the waters of the east are united with the vast streams of the west, merchandize from the Pacific may reach the Atlantic by steam boat conveyance, and it is not soaring into the regions of fancy to suppose that at a future day (no doubt remote) we may receive our teas and silks from Canton, by the way of the Columbia, Missouri, Ohio, Allegheny, Susquehanna, and Schuylkill.—Nature has done her share of the work; let art complete it.

are few, and can, as well as those in prospect, be easily averted; and it shall be my endeavour to show, in the following pages, both the danger and the safe-guard.

The great protecting feature of that safe-guard is the commerce of the Susquehanna, and I will begin by giving a short description of its waters.

THE SUSQUEHANNA.*

A great proportion of the country, watered by the Susquehanna, is already in a state of cultivation, and the rest will be settled whenever a good route is constructed to an Atlantic market. To trace the source, and the course of this river; to state its immense importance to Pennsylvania; the situation of its present, and the probable extent of its future trade; its capability of improvement, and the large and fertile territory which it accommodates, is my present aim.

The north-east branch of the *Susquehanna* takes its rise from Lake Otsego, in a central part of the state of New-York, and 60 miles west by north from the city of Albany, and from 15 to 20 miles south of the Mohawk river. This lake is about nine miles long, and one mile wide, situated in a tract of country extremely fertile and well settled. Six miles to the west of *Otsego* lies *Canadago* lake, which is nearly as large as the other. From this last mentioned lake a stream called *Oaks-creek*, falls into the *Susquehanna*, nearly five miles to the south of *Otsego*. These lakes lie so near the Mohawk river, and the creeks which flow into it from this direction, that a complete water communication could doubtless be made between them. At present the distance is not twenty miles. From Lake Otsego, to which batteaux pass up the stream, the *Susquehanna* is navigable to the town of *Columbia*, in comparative safety. The few impediments which exist, can be easily and cheaply removed, when no danger whatever will remain: below *Columbia*, the navigation downward is always dangerous; upwards impossible; at least for trading boats. From Lake Otsego the *Susquehanna* runs in a southerly direction, through *Cherry-valley*, about twenty miles; thence it takes a general south-west course, with many meanders, until it comes within eight or ten miles of the Pennsylvania line, which it crosses about 12 miles west of the north-east corner of that state. In this part of its current, about 45 miles from Otsego, the *Susquehanna* receives the *Unadilla*, with a considerable accession of water, and a number of smaller streams. At *Harmony*, which is situated at the point where the river crosses the line of the two states, there is a portage of nineteen miles to the waters of the Delaware, at *Stockport*. After passing the Pennsylvania line, the *Susquehanna* runs a small

* For part of this description, I am indebted to a valuable pamphlet, written by Mr. Condry, in the year 1796,—and have very frequently borrowed both his thoughts and language.

distance to the south, and winding at the great bend in a course to the north-west, it again crosses that line, seven or eight miles further, in a direction nearly north-west, receiving in Pennsylvania a number of small creeks. Meandering then to the westward, through the state of New-York, it is increased by the Tioughnioga, and Chenengo rivers, in a joint current, and other waters of less importance. It then crosses the line of the two states a third time; flowing hence to the south, the Susquehanna is joined at Tioga-point by the Tioga river, three or four miles from the New-York line, with a very considerable increase of water. The Tioga is navigable from its mouth for batteaux to the distance of fifty miles, and its northwesternmost sources are but a few miles from the *Chenessee river, which runs into Lake Ontario*. With this lake it is also nearly connected with many streams, which flow into it from the north, and the numerous smaller lakes which are situated between the Ontario, Chenessee, and north-east branch of the Susquehanna, watering large tracts of some of the richest land in the United States. The Tioga is thus very conveniently connected with Lake Ontario, by a communication nearly, and which, at a small expense, may be made completely, a water communication. From the mouth of Tioga to Newtown is 18 miles—the portage thence to Seneca lake is 19 miles more. This last distance has lately been surveyed by order of the Pennsylvania government, and I shall refer to it in the course of my remarks, to prove that a lock navigation can be made, without much difficulty, from Seneca lake to Newtown. From Seneca lake the distance to Ontario is 122 miles; over, however, a navigation considerably impeded by falls, yet presenting nothing insurmountable in the way.

By these two streams, (the north-east, and the Tioga branches of the Susquehanna), all the country lying between them, and lake Ontario, together with the trade of that lake, and those attached to it, will be connected with Philadelphia, by means of the Swatara at Middletown, and the Tulpahocken near Reading, on the Schuylkill.

At the Painted post, within twenty miles of the mouth of Newtown creek, in the state of New-York, the Tioga is separated into two branches, the northwest, and the south branch. This last approaches very near a branch of the Alleghany, and will perhaps one day offer an easy communication with the western countries, for the people of that district, as it is not more than 10 or 12 miles distant.

From the junction of the Tioga, and the northeast branch of the Susquehanna at Tioga-point, the river flows in a general southeast course, with very considerable meanderings nearly to Wyoming, without any obstructions by falls.

Mr. Chapman, to whose manuscript report I have already alluded, speaks of this section of the river thus:* ‘This part of the

* Manuscript report in the Surveyor General's office.

northeast branch is navigable for boats, carrying about *twenty tons*, *at all seasons of the year*, when not obstructed by ice, which obstructions occur generally about Christmas, and continue until the middle of March. The boatmen are getting more into the use of sails, and I have seen during the last season, in a number of instances, boats loaded with twenty tons, ascend the Wyoming falls, by the force of wind only.' About eight miles below where this branch enters Pennsylvania, there is a village on an elbow of the river, called 'Great-Bend,' from whence a turnpike road has been made to Coshecton, on the Delaware river; another turnpike from Milford, on the Delaware, to Owego on the Susquehanna, in the state of New-York, is now making; and as may be seen on the map, there is a portage of only nineteen miles from Harmony on the Susquehanna, to Stockport on the Delaware. The intercourse between the two rivers, is daily increasing, so that vast quantities of lumber are carted across these turnpikes, though at a heavy land expense, and floated to our market down the Delaware. These objects would be at half price, if the waters of these two great rivers were united by a canal, and so abundant as soon to become an article of export to the West Indies or elsewhere.

A few miles on this side of the line, which divides New-York from Pennsylvania, the Tioga river, as I have already said, comes into the Susquehanna from the northwest, and just within the line of New-York, and on the Tioga, stands the small village of New-town. From this place to Seneca Lake, the legislature had a survey made last summer by two able engineers, Mr. Robert Brooke, of Philadelphia, and Mr. Charles Treziyulny, of Centre county.—These two gentlemen fulfilled their task satisfactorily, and laid before the assembly a plan and profile of the survey and levels, executed in a style of great elegance, and accompanied by a report, from which I make the following extracts:

* 'The subscribers, commissioners appointed by his excellency Simon Snyder, in pursuance of an act of the general assembly of the said commonwealth, passed the 22d of March, 1817, to explore the route of the intended canal for uniting the waters of the Seneca Lake and Tioga river, in the state of New-York, report:

'That we believe the making of the canal practicable, there being no other difficulty to encounter, but the great descent of the ground, and the consequent number of locks which will be required upon it. Although the descent from the summit level to the Seneca lake be great, it is pretty regular, and the ground will be easily dug, there being no rocky or otherwise difficult ground to pass.

'If this canal be made, it will, with the proposed canal from Candaigua outlet to Sodus' bay, *complete a chain of boat naviga-*

* See report in the journal of the House of Representatives, page 394.

tion from lake Ontario to the Susquehanna;* thus uniting the great northern and southern waters. The immediate benefits which will result to the people of Pennsylvania, will be the plaster and salt trade of New-York, by which the interior of the state will be supplied with those necessary articles of subsistence and of agriculture. In return the citizens of Pennsylvania, will find a market for their coal and iron in the lake country of the state of New-York.'

The length of this canal will be nineteen miles and one hundred and thirty-five poles, and will cost by the computation of these gentlemen, \$583,300. All necessary materials for building the locks, &c. can be obtained in great abundance, and of an excellent quality, in the hills adjacent to the route of the canal, in all parts, from the middle ground northward to the Seneca lake.

The northeast branch of the Susquehanna was minutely examined by order of government,† and a full report made thereon to governor Mifflin. The commissioners began at the line which divides us from New-York, and 'proceeding thence downward to the junction of this branch with the west branch, found the river to be of easy current, and a regular and most beautiful stream, containing *very few obstructions to the navigation.*' At Sunbury, the northeast branch of that river is joined by

THE WEST BRANCH.

This branch takes its rise to the west of the Alleghany mountains, and runs with many considerable windings, in a northeast course, until it meets (about one hundred and six miles from its mouth at Sunbury), the Sinnemahoning, by which it nearly communicates with the two branches of the Alleghany; coming in contact, as it were, with those branches, by its two courses to the north and to the west. Through either or both of these courses, the navigation of the Susquehanna is connected with the trade of lake Erie and the surrounding country, almost by a water communication. There is a portage, as marked on the map, of 23 miles from the north branch of the Sinnemahoning, to the Alleghany, and another from the west branch of that river to Little Toby's creek, (a branch of the Alleghany) of only 14 miles. They both lead to lake Erie; while the western one alone leads to Pittsburg. As all the branches have been very exactly examined by order of the legislature, and are of the utmost importance to the state and to Philadelphia, I shall speak of them and of the *Alleghany interlocking waters*, with as much precision as possible, even at the risk of prolixity.

* And by consequence, if the Middletown canal be finished, from the Susquehanna to Philadelphia.

† See report of Reading Howell and others, to governor Mifflin, page 20, in Appendix to journal of House of Representatives of state of Pennsylvania, for the session of 1815-16.

THE FIRST ROUTE TO LAKE ERIE.

From the north branch of the Sinnemahoning, there is a portage of 23 miles (see the map), to the head of the Alleghany river; down the Alleghany (partly through New-York state) to the mouth of Conewango, good navigation 76 miles;—up Conewango to Chatauque lake, twenty-eight—across this lake to its head, seventeen, portage to lake Erie from Chatauque, nine miles twenty chains.

SECOND ROUTE TO LAKE ERIE.

By the west branch of Sinnemahoning, the connexion is thus:—From the upper navigable part of said branch to Little Toby's creek, (see map) a portage of *fourteen miles*; down that creek to the main branch, ten—down the main branch of Toby's creek to the Alleghany, seventy—up the Alleghany to French creek, thirty-five—up French creek to portage, sixty-six;—across the portage to the town of Erie on lake Erie, (see the map) fifteen and an half.—

These are the distances between the waters of the west branch of the Susquehanna and lake Erie, remembering always that the last route, as a view of the map will show, leads by an excellent navigation to the Ohio and the great rivers of the west, as well as to lake Erie. I will now turn to the report made by the commissioners appointed by the state to examine these waters.*

'Lake Chatauque, say they, is about 18 miles in length, and near three miles in width. The depth is much more than is necessary for any navigation there. The lake affords water sufficient to render the Conewango navigable both in the fall and spring, and it is capable of improvement, so as to make that creek navigable through the summer. The lower end of the lake may, at a small expense, be dammed across at the head of the creek, so as to raise the water in the lake several feet, and it appears reasonable to presume, that by this means, boats drawing twenty inches of water, may at any time be transported down the Conewango to its mouth. They, (the commissioners) are of opinion, that there is no part of this creek, which may not be improved for the purposes of navigation.

'From the mouth of this creek upward to the carrying place, opposite to the north branch of the Sinnemahoning, the Alleghany river is a gentle stream with a smooth bottom, wholly free from rocks, and requiring nothing more to render it navigable than clearing it from fallen timber, and some few amendments where the channel is divided by small islands, of which there is not one of any difficulty.

'The portage here (marked 23 miles on the map) from the Alleghany river to the place where they left their canoes on the Sinnemahoning, measures along the path twenty-three miles and

* Report of commissioners, appointed to view the western waters.

twenty-four perches; but they conceive, that the north branch of Sinnemahoning may be improved by lock navigation, from the place where they left their canoes, up to the Elk-lick, and that the Connenogahee branch of the Alleghany may in like manner be improved, so as to bring the distance between the two, to nine miles.

‘The Sinnemahoning from that fork down to the west branch of that creek, will require some expense to make it navigable.’

This is an extract from their report of the first route to lake Erie; the second is thus examined by the same commissioners, beginning at the present town of Erie:

‘The harbour of Presquisle, (or Erie) is capacious and equal to any trade which can lead to it. From this harbour to Le Bœuff, on the margin of the lake of that name, the distance is 15 miles and an half, on the course of the road. French creek leads from lake Le Bœuff, and has been in use for conveying provisions and stores for many years. There are no falls in this creek of any difficulty; but near the mouth the channel is wide, and the waters consequently shoal towards the latter end of summer. The Alleghany river, from the mouth of the Conewango to the mouth of French creek, and from thence down to the Kishkemanettas, is free from rocks, which in any degree impede the navigation, and no where so rapid as to be dangerous.’ The commissioners entered Toby’s creek August 7, and found the waters towards its head, very low. This creek is rapidly raised by rains, but is in midsummer generally very bare of water. They had no opportunity of examining precisely where the portage from Little Toby’s creek to the main branch of Sinnemahoning, might most advantageously commence; but they conceive it may safely be estimated at not *more than fourteen, nor less than twelve miles.*

‘The main west branch of the Sinnemahoning may be rendered navigable: it is however rocky, and will require some labour.’

From the mouth of the Sinnemahoning, the Susquehanna turns, with many extensive and irregular windings, to the east, until it reaches the mouth of Muncy creek, receiving in its course a number of considerable streams, such as Bald-Eagle, Pine creek, Locoming and Loyal Sock. Among these, *Pine creek* should be particularly distinguished, as affording at all seasons a great plenty of water. John Keating, Esq. who was deeply interested in the *Asylum* purchase, and who has an intimate knowledge of this creek, says in a letter to me, ‘that it affords a third route to lake Erie, by a short cut of eighteen miles between it and the Alleghany river. The distance from the mouth of Pine creek to the Third Forks (Big meadows) is about 55 miles, and from thence, 11 or 12 miles up the west branch of said creek, to the canoe place, (Elk-lick.) I have seen a canoe several miles higher up than the commonly called canoe place, and from that spot there is but a distance of eighteen miles to Condersport on the Alleghany river.’

There is a good road between Pine creek and this river, which has been constructed principally by the state.

‘Pine creek has been considered,’ says Mr. Keating, ‘not only as affording an easy and short communication between the eastern and western waters, at the very head of the navigation, but also as a most advantageous outlet for the counties of Tioga, Potter, and M’Kean, and of all that part of the state of New-York, lying on, and contiguous to the Genessee river; the head-waters of which interlock with those of Pine creek and the Alleghany.’

The Genessee (or Chenesee) river flows into lake Ontario, and will furnish a short route to that inland sea. There is a curious circumstance (see the map) sometimes occurs at the northeast head of Pine creek, whose source is in a morass, the same in which the south branch of the Tioga rises. It happens in wet weather, that by means of this morass, there is water enough for canoes to pass from one source to the other; thus insulating all the country between these head waters, and the forks of the Susquehanna at Sunbury.—It is likewise worthy of note, that the west branch of this creek, takes its rise as may be seen by the map, on the *very highest ground in Pennsylvania*; from which height, in a circumference of about twenty miles, rise all the sources of the Alleghany, the western branch of the Susquehanna, Tioga, Pine, and Chenesee rivers.

From Pine creek down to Sunbury, and thence to Middletown, ten miles below Harrisburg, there are no material obstructions. The water is generally smooth, the stream wide, and susceptible with very few improvements, of constant navigation, at all seasons, except when frozen. A few miles above Harrisburg, the Susquehanna receives a great accession to its waters, by the junction of the *Juniata*. This is a very important branch, particularly to Philadelphia, and has been accurately examined by state commissioners, at various times. On one occasion by Mr. Timothy Matlack, and two other gentlemen, and on another by Mr. William Findley. I shall give a few extracts from each of their reports, remarking, en passant, that they both concur in giving the Juniata the preference as a leading route to the Ohio. Those gentlemen began by examining the interlocking branches of the Alleghany, and then proceeded to view the Juniata itself, and in that course we will follow them.

They entered the *Kishkemanettas*, a branch of the Alleghany, (see map) on an 18th of August, and of consequence saw it when the waters were very low—indeed they happened to be lower than they had been for many years; yet they proceeded up this river and up the Conewaugh in their canoes, with their provision and baggage to within a mile and a half of Chestnut ridge. By diverging to the right and left, they entered the Loyal-hanning and Black-lick creek (lateral streams of this branch of the Alleghany) and afterwards the channel of the Conewaugh, and found them nearly as boatable as the Kishkemanettas. They next pro-

ceeded to examine very minutely the passage through Chestnut ridge, and other parts of these waters, until they reached a small branch called the Little Conemaugh, which they represent as rocky in places; 'but the whole of this creek,' say they, 'may be made navigable by removing the rocks, there being water sufficient for the purpose.' They judged the distance or portage from this creek to *Poplar run*, which is the head water of the *Juniata*, to be 16 and one quarter miles.* These same gentlemen entered on the view of the *Juniata* on the 6th of September, commencing at the mouth of *Poplar run*. The channel down to Frank's-old-town, contains a quantity of water, more than sufficient for lock navigation, and if it were properly confined, perhaps equal to a navigation for flat-bottomed boats. The water continues plentiful through a bed rather rocky, down to the Canoe narrows, and thence it is increased by other streams, till it reaches a place called the Bend, without other material obstructions than fish-dams. In common freshes there is a good navigation from Huntingdon to the junction of its waters with the *Susquehanna*; a distance of about eighty-six miles, at which time boats with one hundred and seventy barrels of flour descend to a market; and it is navigable also on those occasions for good sized flour-boats, as high up as 120 miles from its mouth.

The *Susquehanna* receives the *Juniata* about thirteen miles above Harrisburg, and twenty-three above Middletown, and spreading to the breadth of a mile or more, after this great accession of water, flows with majesty and beauty until it passes the town of Columbia.

Thus far this noble river is all that could be wished; thus far have we traced it in its flexuous passage, along the shores of an extensive region, either cultivated or cultivable, in a distance of perhaps one thousand miles, in the whole of which course it is not interrupted by a single fall. There are many rapids within its bed; but no impediments which a trifling effort of art and small expense may not be able to remove, and leave a sufficient depth of water at most seasons, for any boats which the trade, the most extended may require. But nature, after giving the greatest facilities to the navigation of this fine river, from its sources to the town of Columbia, has, a few miles below that town, narrowed its bed, heaped rock upon rock, and made a descending voyage perilous in the extreme, and by this contraction of its waters and consequent rapidity of its current, precipitous banks, and iron bound shores, utterly precluded all hope of obtaining a secure ascending navigation. Mr. Latrobe, who was appointed by the state some years ago, to view and report upon the *Susquehanna*, says in a letter to

* This portage, says Mr. Findley, in his report, might by a canal and lock navigation of the *Poplar run* branch of *Juniata*, and the Little *Conemaugh*, be reduced to a distance not exceeding five or six miles, or possibly removed altogether by locking the waters of *Poplar run*, *Bob's creek*, and Little *Conemaugh* into each other, by means of a reservoir near the summit of the Alleghany hill.

the secretary of the treasury of the United States,* that from Smith's ferry, six miles above Havre de Grace, to Columbia, 'the whole extent is one tremendous rapid, although not every where of equal velocity, or equally dangerous. Wherever the river crosses a valley of limestone or slate, the rocks are worn down into a smoother and wider bed; but when it has to cross a ridge of granite, its course is immediately broken by irregular masses and range of rocks; its bed is narrowed and inclosed by precipices, and its torrent furious and winding. After it has passed Jochara valley it suddenly contracts and is received into the narrow ravine which it has *sawed* down in the granite hill called Turkey hill. From its first entrance into the Turkey hill, to the tide (six miles from its mouth at Havre de Grace) there is no part that deserves the name of a sheet of smooth water. When the river is full, the whole ravine, about half a mile in width, contains only one furious torrent, in which few rocks comparatively are to be seen above the water; but the danger is not the less, and very skilful pilots, and many and stout hands are required to carry a boat or an ark safely down. But in the autumn, and in a dry season, the river itself can for six miles scarcely be seen, and its bed appears a barren and dry waste of irregular rocks, among which the loud roaring of water is only *heard*: for, from the Turkey hill to near the mouth of Conestogo, the whole river is discharged through a channel generally about sixty feet wide, in the greatest part of which the depth and the rapidity of the torrent is such, that it has not been fathomed.' From this description, adds Mr. Latrobe, 'it may easily be imagined that if the descent of the river (from Columbia) with boats loaded with produce is dangerous and difficult, the ascent must be still more so.'

Thus much says Mr. Latrobe. As it is of the greatest importance to the Philadelphians to be perfectly well informed of the obstacles placed in the way of navigation on this river below Middletown, so as to appreciate properly the vast advantages to be derived to them from these natural and insurmountable impediments, I will add to the extracts already made from Mr. Latrobe's letter, the report of commissioners appointed by the state last year, for the express purpose of examining these difficulties. Before I give that report, let me refer, however, to what I have already said as to the most advantageous way for Philadelphia to participate in, I may say *engross* the commerce of the Susquehanna.

The Schuylkill being cleared, the next link, and which may emphatically be called the golden link of the water chain, is across from Reading to Middletown. This last village situate at the confluence of the Swatara and the Susquehanna, is surrounded for 30 or 40 miles in every direction, by a country the most fertile, the most fruitful, and the best cultivated in America; it is a country

* Gallatin's report upon inland improvement, page 93.

which may with great propriety be call the Belgium of the Union. Through part of this district runs the Swatara, which with its branch, the Quitapahilla, reaches to within a little more than four miles of the head-waters of the Tulpahocken, which empties itself into the Schuylkill, just below Reading. Now if the Philadelphians join these waters by finishing a canal already begun, or even dig a canal across the whole of Lebanon and Dauphin counties, (a distance of only 70 miles) they unite the Schuylkill and Susquehanna, and bring to their city the trade of this last river, which from the embarrassments at its mouth can never through that out-let become extensive; whereas a sale for all manner of produce could readily be made at Philadelphia, if the river and canal navigation was completed; and the same conveyance would furnish the most secure means to the trader to carry home every object of traffic with which he might incline to load his boats.

Upon this great geographical advantage, I congratulate Philadelphia. It will give to her market, I repeat it, the exclusive custom of a numerous people, inhabiting the upper banks of the Susquehanna, and who can sell and purchase there as advantageously as at any other place in America, while the Middletown canal will obviate to them, all the difficulties which nature has thrown in their way, at the mouth of that river. Intending hereafter to return to the subject of this canal, I proceed to state what was done by the gentlemen before alluded to.

Last year, commissioners were appointed by Pennsylvania to examine the state of this river, in conjunction with commissioners appointed by Maryland. Benjamin R. Morgan, Esq. a gentleman well known to this district for his long public services and accurate acquaintance with every part of the state, was at the head of the Pennsylvania commission. At the last session, he and his colleagues reported the following facts in relation to the Susquehanna.

* In pursuance of your joint resolution, passed the 25th of March, 1817, and of communications received from the commissioners appointed by the state of Maryland, we met six of their number at Havre de Grace, on the 30th day of June and the first day of July; but from the unusual height of the river found it would be useless, if not impracticable, to ascend and examine its bed. Messrs. Harris, Hallenback and Wilson, were therefore appointed to engage at Columbia or elsewhere, a suitable river-boat, with at least six hands, properly equipped with ropes, poles and oars, and meet the other commissioners of the two states at Port Deposit, on the 11th of August, to proceed with them in her to Columbia or Harrisburg. The commissioners then adjourned to meet at that time and place.

On the 14th of August, having been joined by general Winder, Messrs. Gale, Couden, Hollingsworth and Jarrett, we proceeded

* See journal of Senate, for session of 1817-18—page 44.

with the three former to the mouth of the Maryland canal, and the height of water continuing such as to prevent our further ascent in the bed of the river, entered the canal, and on the succeeding day, reached the upper end of it, making during our progress, such observations on the bed of the river, and collecting such information respecting it as our situation enabled us to do.'

The commissioners go on to state their difficulties in ascending the river, which were so considerable, that though they were in a well equipped boat, they did not reach Columbia until the 21st; taking seven days to go fifty miles; and they then proceed thus:

'The result of our examination of this part of the river, is an unanimous opinion that, any continuation of a canal navigation, from the head of that already existing in Maryland to Columbia, or the head of Turkey-head falls, is *impracticable*. In this opinion, we believe those of the Maryland commissioners who accompanied us, fully concur.

'2d. That although the ascending navigation, may, by means of towing paths, wing dams, chains, and *perhaps* in one or two places, short canals with locks, be considerably amended, it must *always* remain *tedious, difficult* and *dangerous*, and if *even free from toll*, more expensive and less eligible than the present land carriage from Baltimore, and even from Philadelphia.' This was the unanimous opinion of our commissioners.

The Maryland canal, of which these gentlemen speak, extends around the falls, between the Pennsylvania line and tide water. The utility of this work, says Mr. Gallatin in his report to congress, is but very partially felt, whilst the bed of the river remains the only communication from its upper extremity to Columbia.

The canal, 30 feet wide, 3 feet deep, and admitting boats of 20 tons, is nine miles in length, with a fall of 59 feet.* The descent is effected by eight stone locks, each of which is 100 feet in length, and 12 feet wide. The water is supplied by the river itself; and in order to cross the rivers Conawingo and Octorava, these, by means of dams, have been raised ten and twelve feet to the level of the canal.

Its defects consist in the want of sufficient breadth of the locks, which do not admit the rafts and wide flat bottom boats, generally used in bringing down the country produce, and in want of water at the lower end of the canal. *The annual tolls have not yet amounted to ONE THOUSAND DOLLARS, whilst the expenses are stated at twelve hundred; and the capital expended, at 250,000 dollars!!*

This canal has lately been sold, I understand, to a gentleman of Baltimore, for much less than one half its cost.†

But to return to the commissioners. Those gentlemen next give an account of their further progress up the river, until they

* The whole fall from Columbia to tide water, in a distance of about 50 miles, is 140 feet.

† This must always be a bad stock, owing to the frightful hazards which boats encounter below Columbia.

reached Northumberland, where the waters of the two great branches meet, and they then proceed thus:

‘ From the very attentive view we have taken of this part of the river, (that is, from Columbia to Northumberland) and the intimate knowledge some of us possess, as well of the advantages as the obstructions and difficulties attendant on its navigation, we are *impressed with a thorough conviction that there is no part of the internal communications of this state, which can be more EFFECTUALLY improved at so small an expense*, probably not exceeding the losses that may occur in a single year, if the river is permitted to continue in its present imperfect state of improvement; nor can we, impressed as we are, with the importance of the great and increasing population and trade of the northern and western branches of the Susquehanna, forbear recommending them to early and effectual legislative attention, as they appear to us intimately connected with the objects, although not specifically embraced by the words of the resolution appointing us, and susceptible of great improvement at a comparatively small expense.’

‘ We recommend a division of the different parts of the river into the following sections, the improvement of each to be entrusted to separate agents and contractors, viz.

Section 1. Columbia to mouth of Juniata.

2. Mouth of Juniata to Northumberland.

3. Northumberland to Wilkesbarre.

4. Wilkesbarre to Tioga Point.

5. Northumberland to mouth of Anderson’s creek in Clearfield county.’

The commissioners then give in detail the sums required for this important object. I dare say, the reader is prepared to see a column of some hundred thousands of dollars! Let him peruse the following official return made, as the commissioners say, ‘ with great care, and with the aid of persons well acquainted with the river, and consulted by them;’ a return which I give here less in detail than they have done, by omitting, for the sake of brevity, the minute divisions into which they have separated each section.

The commissioners state, that from the little Conewago, a few miles above Columbia, to Shamoken ripples, near Sunbury, the totality required is

- - - - - 8,100
NORTH BRANCH.

From Crook’s ripples to Tioga Point, - - - 6,900

WEST BRANCH.

From Scott’s ripples to Anderson’s creek, - - - 3,780

Superintendence and contingencies, - - - 1,500

\$20,280

Twenty thousand two hundred and eighty dollars for the improvement of the navigation of a river from Columbia upwards, which with its ramifications extends at least one thousand miles!

and that too through a fine fertile country, wanting nothing to people it with robust farmers, but a good safe road to market!! That road the Philadelphians can and will open. Need I repeat that it lies between Middletown and Reading.

Having shown, I think, in the fullest manner, the vast value of the Susquehanna; the goodness of its navigation above the Columbia, and the badness of it below that town, it remains to speak a little more at large of the practicability of turning its waters towards those of the Delaware, as well as to consider generally the preeminent advantages which we possess for monopolizing not only the trade of that river, but also of the lakes and western waters; for, * within the whole habitable globe, there is not a country, of equal dimensions, which offers to its industrious inhabitants more resources of wealth, independence and happiness, than Pennsylvania; considering the salubrity of climate, the fertility of soil, and the means of communication by the *inland navigation* of our great rivers and their numerous branches, embracing and interlocking with each other, and spreading themselves (up to their sources) through all parts of the state; and forming *water communications* by sundry routes, from the *tide waters* of the Delaware and the Atlantic, to the great lakes and extreme bounds of the United States.'

The canal which is to connect the Schuylkill and Susquehanna navigation is, as I have several times observed before, the *chief link* of this vast chain, and is a work which ought to be speedily executed. Surveyors are at present occupied in revising former explorations. Upon their care and accuracy very much depends; perhaps the future fate of Philadelphia. The business, however, is in good hands, and in order to throw as much light as possible upon this extremely important section, I will examine the subject,

- 1st. As to its practicability.
2. Estimate of cost.
3. Supply of water on summit level.
4. Trade and tolls.
5. Comparative expense between land and water carriage.

1st. *Its practicability.*

The ground between the Schuylkill and Susquehanna, along the Tulpahockon and Quitapahilla, was explored in the year 1790, by Messrs. Timothy Matlack, Samuel Maclay and John Adlum, in pursuance of a vote of the general assembly, and the report of these gentlemen, which is full and copious, may be seen in an appendix to the Journal of the House of Representatives, for 1815-16. They speak very favourably of the streams which they examined; which are represented as susceptible of easy improvement by the usual method of contracting the channels.

* Report of Schuylkill and Susquehanna canal company in the year 1794, to general assembly.

*But the summit level, or middle ground, between the head waters of the Quitapahilla near Lebanon, and those of Tulpahocken near Myer's town, (a distance of about four miles and a half) had been examined and levelled even before this. As far back as the year 1770, a committee appointed by the American Philosophical society, attended with precision to that business, and were followed some time after by David and Benjamin Rittenhouse, Mr. Matlack, Mr. Adlum, and others, who all agreed in the results of their work, respecting the proper tract of the canal.

These gentlemen were succeeded by Mr. William Weston, son-in-law of the Duke of Bridgewater's famous engineer *Brindley*, who had been induced to leave England upon the promise of a salary of 1500*l* sterl. per annum, to be continued to him for seven years. This gentleman, who had directed the execution of some of the principal canals in England, and whose great abilities, activity and experience in all the branches of his department, merited and obtained the entire confidence of those who employed him, repaired to the ground marked out for the canal, immediately after his arrival at Philadelphia, and the following was his written opinion upon this first survey: 'From such a view as the time and the season of the year (month of February) would permit me to take of the canal through the middle ground near Lebanon, I have little doubt but the most favourable line has been adopted.' Mr. Weston, in a subsequent report to the managers of the Schuylkill and Susquehanna navigation, goes at large into an examination of the propriety of connecting the two rivers Tulpahocken and Quitapahilla by a canal, or of making a canal alongside of these rivers from Reading to Middletown, so as to use their waters as feeders to the canal rather than improve them in their natural channel. Both plans are submitted by him, however, and left to the managers to decide upon. He inclines to favour the long canal; but no where does he deny the practicability of uniting along this route the waters of the Schuylkill with those of the Susquehanna. That the work is capable of being executed, does not then admit of a doubt. Let us next consider,

2dly. The estimated cost.

Whole cost from Lebanon to Schuylkill, as estimated by Mr. Weston,† including purchase of land, mills, water, &c. 38 miles,			
at 18,666 67 per mile,	-	-	\$709,333 33
From Lebanon to Susquehanna, 32 miles, at 16,000			
per mile,	-	-	512,000 00
			<hr/>
			\$1,221,333 33
			<hr/>

* Historical account of canal navigation in Pennsylvania.

† The work done on this route under Mr. Weston's superintendence, fell short of his estimate in its actual cost, about eight thousand dollars; a strong proof of his good judgment.

If instead of a canal navigation along the margin of the rivers, the beds of the said rivers, wherever they can be made safe and permanent, should be adopted, the expense may possibly be found less. It should be noted too, that a great deal of land has already been paid for as well as all the water rights on the summit level, and three miles and five locks of the canal finished; all which belong to the present Union Canal company.

3dly. Supply of water on summit level.

This supply is ample, according to actual measurement, as is verified by Mr. Weston on the 5th February, 1793, who speaks thus on this very essential point: 'The first and most important object is a due and adequate supply of water. I judged it expedient to examine the various springs which are to supply the summit of the canal. It is very apparent they may be conducted into the canal with great ease. The springs were lower than when gauged last summer. It will be needless to say any thing further on this subject, as Dr. Smith will deliver to the committee a calculation of the number of lock-fulls of water they yield in twenty-four hours; which seems to have been made with great care* and attention. This, I apprehend, will be adequate to the trade that may reasonably be supposed to pass over the summit, making proper allowance for exhalation and leakage. Suppose the crown level 3 1-2 miles in length, the extra depth 4 feet, the mean width 32 feet, it will contain 2,365,440 cubic feet of water, which, at 3,420 cubic feet to a lock, will give 691 locks full.'

4thly. Trade and tolls.†

1. Taking the extent of country on an average width of 10 miles on each side of the canal from *Reading* to *Middletown*, the distance being 55 miles by a straight course, we shall have 1100 square miles, or 704,000 acres; and taking each plantation at 320 acres, we have 2200 plantations. Supposing each plantation to cultivate 40 acres of grain, at 15 bushels per acre, the total produce will amount to 1,320,000 bushels, which, at 57 lb. per bushel, gives 37,620 tons; and taking the average tonnage at half the length of the canal, or 35 miles, according to its various windings, it amounts to, at 6 1-4 cents per ton per mile, - - - - - \$82,293 75
2. The produce of the extensive country bordering on the navigable waters of the *Susquehanna* and its numerous branches, is at present very great; but in a few years, particularly if this canal should be perfected, it will, from the natural increase of population, and the rapid manner in which vacant lands must settle, from the certainty that will then

* I refer those who wish to see the particulars of this calculation, to page 70 of the *History of Canal Navigation in Pennsylvania*, where a very exact table may be found.

† See page 62 of the same.

Amount brought up,	-	-	-	-	82,293 75
exist of having always a good road to a good market, augment beyond all bounds of calculation. It was estimated in 1793, at 600,000 bushels. Those districts contain now more than double the inhabitants they did then, so that 1,200,000 bushels, or 32,142 tons is a moderate calculation; particularly if we take into view the improvement in farming; and as the distance is 70 miles, the tonnage will amount to 4 dollars 37 cents per ton.					142,460 54
3. Back carriage, consisting of <i>salt, groceries, liquors</i> , and various kinds of European and domestic manufactures; this it is supposed will bring <i>one-fourth</i> of the above.	-	-	-	-	56,188 57
4. Exclusive of grain, &c. there will be transported vast quantities of <i>lime, plaster of paris, timber</i> for building, <i>coals, firewood, iron, stone, bricks</i> , &c. which may safely be put at <i>one-tenth</i> of the two first articles.	-	-	-	-	22,475 42
					<hr/> \$303,418 28 <hr/>

Besides the above annual income, the stockholders will derive great emolument from the seats for water-works, &c. But as the expenses, both current and contingent, will be heavy, this item, together with a large deduction from the foregoing sums may be set aside to meet them.

Taking the cost of the canal for 70 miles at the full amount stated by Mr. Weston, which is about \$1,200,000; and supposing the nett income from the above items to be only 240,000 dollars, we shall see this canal yielding at once to the stockholders a dividend of 20 per cent. per annum. The rapid increase of the country would soon carry that dividend to the extent allowed by law, which to the Union Canal company is 25 per cent.

It now remains to consider,

5thly. The comparative expense between land and water carriage.

WATER CARRIAGE.		LAND CARRIAGE.	
From Middletown to Philadelphia, 70 miles by canal and 62 by Schuylkill, make 132 miles		From Middletown to Philadelphia by land 90 miles.	
Toll on 20 tons of produce at 6 1-4 cents per mile,	\$165 00	20 tons at 1 dollar per hundred,	\$400 00
Hauling) 1 man 3 days \$3 00			
20 tons) 1 boy ——— 2 00			
70 m le) 1 horse ——— 2 00			
Freight of goods down Schuylkill,	26 50		
	<hr/> 35 00 <hr/>		
	\$200 00		

It appears, then, that by land the expense is double the cost of water carriage, while the latter saves a great deal in breakage, and conveys property in greater security. The water expense too, is unusually high, as I have put it, on account of the large allowance made for the *river* navigation of the Schuylkill, where no horses will be used in all probability, and the boats will require a strong crew to pole up against the stream. In a long continued line of well established canals, these expenses would be much less: as it is, we find the transport half the cost,* and performed with one horse and five men and a boy at most, whilst by land the same goods would require at least 15 men and 60 horses. So that 9 or 10 able bodied farmers and 59 horses might, upon the simple carriage of 20 tons of produce, be turned from the toils of the road to the much more useful labours of husbandry. For further particulars upon this subject, which is becoming so interesting to us all, I refer the reader to 'The Historical Account of the Progress of Canal Navigation in Pennsylvania,' a book from which I could very profitably borrow more than I have done, did my limits admit of it.

If we reach the Susquehanna by the route indicated on the map; that is to say, through the country lying between Reading and Middletown, we shall be below all the large tributary streams of that river, and have greatly the advantage of those who may attempt to cut a passage either from the Lehigh to Wilkesbarre or Berwick, or from the head waters of the Schuylkill to the mouth of the Mahonoy. This latter route offers, however, some temptations; for the distance from the uppermost dam erected on the Schuylkill, to a saw mill on the Mahonoy creek, is only eleven miles. That mill stands about twenty miles from the mouth of the creek, which empties into the Susquehanna ten miles below Sunbury; and of course this route would have the advantage of the waters and commerce of the two great branches of that river.† It is said that the waters of this creek can be rendered navigable for several miles above the mill, and that from the head of the Mahonoy to a small creek that empties into Mill-creek, (which is a branch of the Schuylkill) the distance is short and the intervening ground low and level. This route, therefore, is well worthy of examination; and it is believed that the managers of the Schuylkill navigation have explored it this summer, as well as the one which leads from the northern branch of that river over to Berwick.

Our undivided efforts at present, however, had better be directed to the Middletown canal; because it takes in all the great waters of the Susquehanna, and offers the shortest route to Pittsburg. The course is distinctly marked on the map, and is as follows:

* If team-boats are employed on a river where coal is so abundant as here, the *tes*atch will be greater and the expense much less.

† Letter from John Keating, Esq.

On leaving Middletown we ascend 23 miles against a gentle current, to the mouth of the *Juniata*. This is a large river, and may, with few improvements, be easily ascended at all seasons of the year, when not frozen, to Poplar run; from the head waters of which, to those of the Connemaugh, there is a portage of sixteen miles; and down the Connemaugh to the Alleghany, the water-route is perfectly practicable, as we have seen; and once arrived at the Alleghany the navigation is good into the Ohio and all the vast waters of the west. Some idea of the importance of the trade over this portage, even with its present embarrassments, may be formed from the following fact:

* From the 5th of March, to the 10th of May last, there passed down the Connemaugh river to Pittsburgh, 59 flat-bottomed boats, loaded with bar iron, salt, and store goods, *from Philadelphia*; and each boat carrying from 20 to 40 tons burthen.

No. 1.

The distance from Philadelphia to Pittsburg by this route, is the following number of miles, omitting the chains:

From the tide water of Delaware at Philadelphia to the Tulpahocken	-	-	-	-	61 miles.
Up the Tulpahocken to the canal laid out and commenced	-	-	-	-	37
Length of the canal and summit level	-	-	-	-	4
Navigation of the Quitapahilla creek to the Swatara	-	-	-	-	15
Down the Swatara river to the Susquehanna	-	-	-	-	23
Up Susquehanna to Juniata	-	-	-	-	23
Up Juniata to Huntingdon	-	-	-	-	86
Up Juniata from Huntingdon to Poplar run	-	-	-	-	42
Portage to the Little Connemaugh	-	-	-	-	16
Down Little Connemaugh to Stoney creek	-	-	-	-	18
Down the main Connemaugh and Kiskemanettas to Alleghany river	-	-	-	-	69
Down Alleghany to Pittsburg at the confluence of the Ohio	-	-	-	-	29

Miles—423

No. 2.

When arrived at the mouth of the Kiskemanettas, the trader can turn to the right, if he pleases, and reach lake Erie, at the town of Erie, in the following manner, and by the following distances:

From Philadelphia to the junction of the Kiskemanettas and the Alleghany, as above	-	-	-	394 miles.
Up the Alleghany to French creek	-	-	-	83
Up French creek to <i>Le Boeuff</i>	-	-	-	65
Portage from <i>Le Boeuff</i> to the town of Erie	-	-	-	15

Miles—557

No. 3.

The next route from Philadelphia to Pittsburg is much longer, and also distinctly marked on the map as follows:

From Philadelphia to Middletown, or Swatara, as above	- - - - -	140 miles.
Up Susquehanna to the west branch at Sunbury		65
Up the west branch to the mouth of Sinnemahoning		106
Up Sinnemahoning to the Forks	- - -	15
Up the west branch of Sinnemahoning	- -	24
Portage to Little Toby's creek	- - -	14
Down Little Toby's creek to the main branch		10
Down the main branch of Toby's creek to the Alleghany	- - - - -	70
Down the Alleghany to Pittsburg	- - -	74
		<hr/>
		Miles—518
		<hr/>

The trader can arrive at lake Erie by two passages, via this course: as may be seen by tracing the following statements on the map:

No. 4.

From Philadelphia to the forks of Sinnemahoning as before	- - - - -	326 miles.
Up the north branch of the Sinnemahoning	-	19
By the portage to the head of Alleghany river		23
Down Alleghany river (partly through New York State) to the mouth of Conewango	- -	76
Up Conewango to New-York line 11 miles—thence	} 23	
up the same through the state of New-York, 17 miles to Chatoughque lake		
Across Chatoughque lake to its head	- -	17
Portage to lake Erie at the mouth of Chatoughque creek	- - - - -	9
Along lake Erie to the town of Erie	- -	25
		<hr/>
		Miles—523
		<hr/>

A part of the foregoing route is through the state of New-York, and is the shortest from Philadelphia.—I have already shown by No. 2, that by going a few miles further, that lake may be reached without entering the state of New-York, and by portages one mile less; and I will now give the second route alluded to above, which is also wholly through our own state. It is as follows:

No. 5.

From Philadelphia to the junction of Toby's creek,	
as already stated	444 miles.
Up the Alleghany to French creek	35
Up French creek and the portage to Erie	81
	<hr/>
	Miles—560
	<hr/>

From all these views, it results:

1. That the distance to Pittsburg *by the Juniata* is 423 miles, with 16 miles portage from the Susquehanna.—
2. That the distance to Pittsburg *by the west branch of the Susquehanna* is 518 miles, with 14 miles portage from ditto.—
3. That the distance to the town of Erie, on the lake of that name, *by the Juniata* is 557 miles, with a portage of 31 miles from the Susquehanna.
4. That the distance to the same town, *by Chatoughque* is 523 miles, with a portage of 32 miles from ditto, and,
5. That the distance to that town, by the west branch of the Sinnemahoning is 560 miles, with 29 miles portage from ditto.

The next point to consider is, the advantage which one course may have over the other, with reference to the two routes leading from Middletown to Pittsburg. There are conflicting opinions upon the subject: future surveys must settle the point. Meantime I give to the reader what I have collected.

We have seen that the commissioners appointed to examine the head waters of the interlocking rivers of the west branch of Susquehanna and Toby's creek, and the Juniata and Conemaugh, concurred in recommending the two latter as the best connecting route; and the preference as to distance too, is much in its favour; for here, as No. 1 will show, Pittsburg is only 423 miles from us; the course being almost due west; whereas, in the former, as may be seen by No. 3, the distance to that city is 518, on account of the great sweep to the northwest, which the Sinnemahoning and Little Toby's route occasion.—The expense over the shortest route (by the Juniata) has been estimated by the aforesaid commissioners at 108,000 dollars only. Whether this included a full estimate of lock navigation, and cutting through or round the hills, or otherwise surmounting the difficulties which lie between the union of the two waters, I much doubt. Future surveys alone can ascertain this fact.*

* While on the subject of the Juniata, it may be well to notice the Racetown branch of that river. By a glance at the map it will be seen that this branch is extremely tortuous: I will add that it is a good deal obstructed by dams. Yet I have seen large arcs, four miles above Bedford, prepared to receive a load of wheat, hazard the passage of these dams, wind round its numerous curvatures, and encounter the frightful dangers below Columbia, in search of a market! How soon would these dams be levelled, and how much would the number of these arcs increase, if a safe navigation was opened for them through the Middletown canal to Philadelphia?

The west branch is preferred by some, without, however, denying the practicability of the Juniata route. Mr. Charles Treziyulny, the same gentleman who surveyed the ground between the Tioga and Seneca lake, in company with Mr. Brooks last year, wrote thus upon this subject, to the chairman of the committee of roads and inland navigation.

Harrisburg, March 9, 1818.

DEAR SIR,

In answer to your inquiries, I can say, that I have no doubt of the practicability of connecting the head-waters of the branches of the Susquehanna and those of the Alleghany. I have frequently been, at various seasons of the year, upon the ridges which separate the waters of the Juniata from that of the Connemaugh branch of the Alleghany, and have always been of opinion that there is a sufficiency of water, to make a reservoir upon the summit level, adequate to the feeding of a canal to connect the eastern and western waters. The highest part of the ridges is well supplied with natural springs and rivulets. But it appears to me further, that a far easier connexion could be effected, *and at much less expense*, with the west branch of the Susquehanna, Anderson's and Sandylick creeks.*

The last mentioned creeks being in all seasons of the year plentifully supplied with water, and at the points of separation, there are numbers of other streams in the vicinity which could be connected, for the purpose of feeding an elevated reservoir.

The levelling and surveying of such parts will be the only means of ascertaining the true state with certainty.

I am respectfully, Sir,

Your humble servant,

CHARLES TREZIYULNY.

WILLIAM LEHMAN, Esq. Chairman of the Committee of Roads and Inland Navigation.

By this letter, Mr. Treziyulny thinks, that the route to the north of the Juniata, and which may be seen in the map, is not only easier of execution, better supplied with streams for a reservoir, but can be executed cheaper, than that from the head-waters of the Juniata. If that be the case, it shows how very little the cost will be, since the estimate of the expenses from the Juniata to the canoe place on the Connemaugh is only 108,000 dollars, as already observed.

The dividing ground to the west, between the Alleghany river and Susquehanna, is not so high as has been overcome even in America. Mr. Treziyulny's letter upon the union of the waters in question, is perfectly satisfactory; but even if the hills were higher, and without water to form reservoirs, Mr. Fulton was of opinion that they might be passed. His words are these:

* Head-waters of west branch.

* ‘Should doubts arise on this part of the plan, I beg leave to assure you, that there is no difficulty in carrying canals over our highest mountains, and even where nature has denied us water. For water is always to be found in the valleys, and the canal can be constructed to the foot of the mountain, carrying the water to that situation. Should there be no water on the mountain or its sides, there will be wood or coals; either or both of which can be brought cheap to the works, by means of the canal. Then with steam engines, the upper ponds of the canals,† can be filled from the lower levels, and with the engines the boats can, on inclined planes, be drawn from the lower to the upper canal. For this mode of operating, it is necessary to have small boats of six tons each. As the steam engines are to draw up and let down the boats on inclined planes, no water is drawn for the upper level of the canal, as when locks are used; consequently when the upper ponds have been filled, it is only necessary that the engine should supply leakage and evaporation. There is another mode of supplying the leakage and evaporation of the higher levels: on the tops and sides of mountains, there are hollows or ravines, which can be banked at the lower extremity, thus forming a reservoir to catch the rain or melted snow. From such reservoirs the ponds of canals can be replenished in the dry months of summer. This mode of reserving water is in practice in England for canals, and in Spain for irrigation. In this manner I will suppose it necessary to pass a mountain 800 feet high; then four inclined planes of 200 feet rise, would gain the summit, and four would descend on the other side. Total, eight inclined planes and eight steam engines. Each steam engine of 12 horse power, would cost about ten thousand dollars: in all 80,000. Each would burn about 12 bushels of coal in 12 hours, or 96 bushels for the eight engines for one day’s work.

The coals in such situations may be estimated at 12 cents a bushel; or, - - - - - \$ 11 52

At each engine and inclined plane, there must be five men—total, forty men at one dollar each, - - - 40

Total, \$ 51 52

‘For this sum they could pass five hundred tons in one day over the eight inclined planes, which for each ton, is only ten cents. Suppose the mountain to be twenty miles wide, boating for each ton would cost twenty cents; making a total of thirty cents per ton.’

* See Mr. Fulton’s letter to Mr. Gallatin, in his report upon inland improvements.

† As may be seen every day at the Fair-Mount works on the Schuylkill, where a single engine throws up more than one million gallons of water in 20 hours, for the supply of the city, a height of more than 60 feet.

This great man estimated the cost of transportation, with an average of rough country, at six dollars per ton for 1200 miles by *canals*, perhaps by *river navigation*, *aided incidentally only by artificial cuts*, it may be brought nearly as cheap. But suppose it should amount to double, we might have, with the inland openings which the physical construction of Pennsylvania invites us to make, a ton of goods brought from the *Mandan villages*,* *sixteen hundred miles up the Missouri*, to the *Philadelphia market*, at less cost than we now send two hundred weight by land to Pittsburg! That is to say, three thousand one hundred and twenty-three miles *by water*, *ten times* cheaper than three hundred *by land*! more especially if steam-boat transportation should get into general use in connexion with the canal-boats.

This Missouri commerce, although certain, is yet remote. It is well enough, however, to consider frequently, the vast extent to which our hydrographical capabilities can take us.

In a former page, when describing the north east branch of the Susquehanna, I endeavoured to show the facilities which the ramifications of that branch, together with the opening of a water communication between Newtown and Seneca lake, would give to the trader, for conveying from the very interior of New York, as well as from the Genesee lakes, and lake Ontario, every kind of produce which can be spared: I now beg leave to draw the attention of the reader to the advantage Philadelphia possesses over New York city, both in distance and mode of conveyance; and I acknowledge myself indebted for these items to a pamphlet lately published, and full of useful information upon the internal improvement of this state, ascribed to Mr. Samuel Mifflin, whose activity and zeal in the promotion of these great concerns, merit the thanks of the community.

FIRST ROUTE TO NEW YORK.

Geneva to Albany, land,	-	-	-	192 miles.
Albany, by water to New York,	-	-	-	165
				<hr/>
				357
				<hr/>

On this route there is a land carriage of nearly two hundred miles.

SECOND ROUTE TO NEW YORK.

Geneva to Oneida lake, water,	-	-	90 miles.
Oneida lake to the Mohawk falls, water,	-	-	109
Mohawk falls to Schenectady, water,	-	-	56
			<hr/>
			255

* Sixteen hundred miles down the Missouri—eleven hundred up the Ohio to Pittsburgh—four hundred and twenty-three from Pittsburgh to Philadelphia by water. Total, three thousand one hundred and twenty-three.

Number of miles brought up,	-	-	-	255
Schenectady to Albany, land,	-	-	-	15
Albany to New York, water,	-	-	-	165
				<hr/> 435 <hr/>

ROUTE TO PHILADELPHIA BY MIDDLETOWN CANAL.

From Geneva to Newtown, down the canal in agitation between				
*Elmira and Seneca lake,	-	-	-	45 miles.
From Newtown or Elmira to Tioga Point,				18
From Tioga Point to Berwick,	-	-	-	121
From Berwick to Middletown,	-	-	-	75
From Middletown to Schuylkill at Reading,	-	-	-	65
From Reading to Philadelphia,	-	-	-	55
				<hr/> 379 <hr/>

From Geneva to New York is then by a bad navigation and fifteen miles of land, four hundred and thirty-five miles; whereas the distance *all the way*, by an *excellent water route*,† will be from Geneva to Philadelphia only three hundred and seventy-nine miles: difference in favour of Philadelphia, fifty-six miles.

Besides, the Susquehanna extends to some of the finest western counties of New York, and even as far as Lake Otsego, or within ten miles of the Mohawk, and is then sixty miles nearer Lake Ontario than the tide water of the Hudson; another branch of this river may be ascended as far as Bath, in Steuben county, New York; from whence the portage to Crooked lake is not ten miles, and from this lake to Ontario there is an uninterrupted water communication.

It is well known that the people inhabiting the western counties of New York, look to Philadelphia as to their *geographical* market. ‡ Mr. Church has written and laboured hard with the influential men of this state, to get the waters which do or can be made to lead to our city, cleared of their obstructions. The time is now come, when this great business is about to be accomplished.

The following letters, upon this subject, do honour to the parties, particularly to the liberality of governor Clinton, who seems to me to imply that Pennsylvania is the route through which the produce of the western counties of New York should pass.

* The land part of this route has been surveyed, as already mentioned, and is about 21 miles long. It can be converted into a canal at an expense of about 500,000 dollars, or into a rail-road at a much cheaper rate. This last may be found most feasible, on account of the long winters of that country, during which the canal would be useless; whereas a rail-road, on which one horse may draw four tons, would be in permanent use.

† If the canal scheme is adopted.

‡ A large landholder near Seneca lake.

Copy of a letter from the Governor of Pennsylvania to the Governor of New York.

Harrisburg, September 3, 1817.

SIR,

For obvious reasons, I take the liberty to transmit to your excellency, a copy of an act passed by the legislature of Pennsylvania at their last session, under the authority of which I have appointed Robert Brooke and Charles Treziulny, esquires, commissioners. Those gentlemen have fixed on the 29th of the present month, to meet at the head of the Seneca lake, for the purpose of performing the duties contemplated by the law.

I anticipate no objection to a co-operation on the part of this state, to carry into effect some portion of the vast internal improvements, contemplated by the enterprising and liberal legislature of the state over which you preside. Should, however, any present themselves to your mind, or should your excellency have any suggestions to make on the subject, I shall feel gratified by an early answer to this letter.

I have the honour to be,
With high consideration and respect,
Your obedient servant,

SIMON SNYDER.

His excellency DE WITT CLINTON, Esq.
Governor of the State of New York.

Governor Clinton's Answer.

Albany, 20th September, 1817.

SIR,

My absence from this place, has prevented an earlier reply to your excellency's communication of the 3d instant.

The measures adopted by Pennsylvania to connect the waters of the Seneca lake and Tioga river, exhibit an intelligent, enterprising and patriotic spirit; and the benefits which will arise from the execution of the plan, will be experienced in the creation of an extensive inland trade, and in the consequent encouragement of agriculture, commerce, and manufactures. The obvious tendency of this measure is to facilitate the transportation of commodities from this to neighbouring states. From a full persuasion that the prosperity of our country will be best advanced by multiplying the markets for our productions, and by an intimate and beneficial connexion between the different members of the confederacy, I consider it a sacred duty to overlook local considerations, and to promote, to the utmost of my power, this, and every other plan, which may be subservient to these important objects. And I cherish, with confidence, the opinion, that the state over which you preside will, under the influence of an enlightened public spirit, co-operate with this state in promoting our contemplated navigable communication between the northern and western lakes and the Atlantic ocean.

Under this impression, I now transmit to your excellency the official report of the canal commissioners, and the acts of the legislature of this state on this subject.

I have the honour to be,
Very respectfully,
Your most obedient servant,

DE WITT CLINTON.

Governor SNYDER.

Both these letters allude to the efforts making by the state of New York, to possess itself of the northern and western trade.— Her efforts, and those of Maryland ought to stimulate Pennsylvania, and particularly Philadelphia, to take immediate measures for the security in perpetuity of those advantages which nature has given to them; and in adverting to these rival attempts, I cannot discuss the subject better than by quoting the language and sentiments of the committee on roads and inland navigation,* of last session.

‘ 1. Pennsylvania, (possessed of rivers, the impediments of which, as experience proves, may be passed by short canals and locks) requires an artificial channel of about sixty or sixty-five miles in length; whereas New York requires an artificial channel three hundred and twenty-seven miles in length.

‘ 2. In Pennsylvania the same boat will answer for the whole route, whenever the rivers are united by canals and locks, or canals and inclined planes, and consequently no unloading or detention will take place; whereas, on the route from New York to the Ohio river, the boat which navigates the Hudson river, will not suit the canal; and the boat which navigates the canal will not be adapted to lake Erie, and a fourth boat will be necessary for the Alleghany river, and the canal which connects that river with the lake.

‘ 3. The boats on the Pennsylvania route, may, throughout the whole extent, if they are not driven by machinery, be propelled by poling or rowing: and thus a more certain calculation may be made as to time.

‘ 4. On the Pennsylvania route, the distance from the commercial city (Philadelphia) on the Atlantic waters, to the banks of the Ohio, will be but little more than four hundred miles; whereas on the New York route, it will be about seven hundred and fifty miles. Philadelphia will consequently afford a more speedy and less precarious market, and a quicker communication by mail.

‘ 5. The frequent unloading and warehousing on the New York route, will give opportunities of pilfering; an evil considered of great magnitude in Europe, and which the change of manners which is taking place in this country, will render of great magnitude here.

* Journal, House of Representatives, 1817-18—page 419.

‘6. Nearly the whole of the Pennsylvania route will be through the richest parts of the country, along the banks of rivers already improved and peopled, affording conveniencies and comforts, which many parts of the New York route cannot for a long period possess.

‘7. Pasture last longer in Pennsylvania than in New York, and there will not be as long an interruption by ice; (the difference in the course of the year being computed at two months in favour of Pennsylvania) which, in connexion with the great length of the New York route, will render a communication difficult in the spring and autumn; the most natural seasons for communication.’

So much for our advantages over New York. Let us now consider how we stand with Baltimore,—what is our present situation? No water communication with the Susquehanna, and a heavy toll to pay upon a road three hundred miles long! It does not require the gift of prophecy to foretell, that if we remain idle under such circumstances, Baltimore will acquire very soon a superiority over us; nay, I will boldly aver, that the trade from the Ohio, *through its usual overland route*, will wholly leave Philadelphia in a few years; and,

1. Because Baltimore is nearer to that river by ninety miles, over the new national road, *toll free*,* from Wheeling to Cumberland, and will of course supply the western states with all light Atlantic luxuries, much cheaper than we can; and,

2. Because the steam boats on the Mississippi and its tributary streams, and which are already numerous and susceptible of any increase, will transport all articles of bulk from New Orleans at a less rate than can be done by us.

To counteract these threatened evils, we must furnish a *cheaper* water intercourse, by some of the routes hinted at; and knowing as we do the natural impediments which the lower part of the Susquehanna offers to a communication with Baltimore, we can with certainty monopolize the whole of the commerce of the western waters. But we must make our way to the Susquehanna, and thence to the Alleghany first; and we must go about it soon

* This national road is marked on the map, and is seventy-two miles long. It is constructed (and constructing) of the most solid materials, and is supposed to be very superior to any turnpike or other road in America. A line of stages now runs three times a week, by the way of this road, from Baltimore and Washington. The distance from Baltimore to Wheeling is about 270 miles: the stage runs it in five days. There is now established in Baltimore, a complete uninterrupted stage communication to Louisville, in Kentucky. I will add to this note, that the *Baltimoreans*, deservedly famed for their enterprize, are getting surveys made of the *Codorus* and *Conewago* streams, in order to ascertain the practicability of carrying a water route from York-haven, at the mouth of the *Conewago*, all the way to Baltimore, and thus at once dispense with the mouth of the Susquehanna, by bringing the produce—the entire produce if they can, of that river, to their city, through a canal navigation, by the way of the borough of York.

*** This last circumstance is very peculiarly interesting to every Philadelphian, and should arouse them all!

too; for without the accomplishment of this object is it to be conceived that Philadelphia can long continue to offer attractions superior to Baltimore, particularly when every foot of the way, as the road now stands, must be paid for on turnpikes to our city, while the trader goes *free* to the other? while he travels from Wheeling three hundred and forty miles to *this*, and only two hundred and seventy to *that*? We have a transporting company, it is true; but this does not exclude Baltimore from having one likewise; and all the other advantages which we now enjoy, of better assortment, larger capital, &c. will soon be acquired by that city; her locality will then triumph over all our *land* efforts,—and we shall diminish in trade and size daily; perhaps even by a removal of our western merchants themselves, to swell the capital of our rival city: a *rival*, however, only so long as we neglect to open a water intercourse.

If this approximation of Baltimore to the Ohio, by the new national road, *toll free*, does not awaken us to exertions I invite the Philadelphians to re-peruse the following advertisements, copied from a Buffalo paper of May 12th.

WESTERN LINE.

Sloop Sappho, captain I. Gillaspie, and five other vessels, will sail from New York and Albany every Wednesday and Saturday through the season.

The subscribers, who are connected with some of the most respectable establishments in the interior of the state, on lakes Ontario and Erie, and at Orleans, are enabled to forward to any point, west of Albany, and to Montreal, at prices much below the ordinary rates. *In particular they guarantee, that to Detroit and Sandusky, their charges shall in no case exceed four dollars and fifty cents, and to Pittsburg, six dollars per hundred weight.*

SMYTH and WENDELL, } of Albany.
SATTERLEES and SELDEN, }

And the other advertisement is by Charles Smyth, who 'guarantees to his customers, that the cost of transporting packages of ordinary bulk from *New-York to Detroit*, shall in no case exceed four dollars and fifty cents, per hundred weight, and that sum shall include every charge.'

From Philadelphia to Pittsburg, the common freight varies from six dollars fifty cents, to seven fifty; seldom below the latter; but if the water communication is opened, it will fall by that route to one dollar fifty cents, or less.

In order to explain more in detail the means by which we can counteract the measures taking by New-York to deprive us of the western trade, I will compare the distances between the cities of New-York and Philadelphia and Pittsburg.

From Philadelphia to Pittsburg by the Juniata, as stated minutely a few pages back, - - 423 miles

While the distances from New York to Pittsburg are:
 From New York to Geneva 169 miles by land; the
 rest by water, - - - 357 miles
 Geneva to Buffalo, - - - 120
 Buffalo to Erie or Presqu'isle, - - - 100
 Portage 15 1-2 miles to French creek, - - - 15 1-2
 Down French creek to Alleghany, - - - 65
 Down Alleghany to Pittsburg, - - - 109

766 1-2

Land travelling by New York route as above, including portage at Erie, to be converted into water, - - 184 1-2 miles

Land by Philadelphia route to be converted into water, (supposing the cut at Lebanon to be only 4 miles, and the portage at the head of the Juniata 16, - - - 20

Difference in favour of Philadelphia, 164 1-2

Whole distance from New York, - - 766 1-2 miles
 Ditto ditto from Philadelphia, - 423

Difference in favour of Philadelphia, 343 1-2

New York has another route to Pittsburg through Lake Chamouque into the Alleghany; but it is several miles longer, and worse water.

New York, then, cannot rival us to the west. She is, however, making gigantic efforts to unite the *Atlantic waters* with those of the *great lakes*, which lie to the northwest of us, by the construction of a canal 353 miles 29 1-2 chains long,* with an aggregate fall from Lake Erie to Albany of 661 feet by 77 locks. The average expense per mile of this stupendous work, is calculated at 13,800 dollars, which will make the whole cost amount (according to the commissioners) to - - - \$4,881,738

But Mr. Sullivan of Boston, who superintended the construction of the Middlesex canal, the most perfect work of the kind in America, after stating that 27 miles of his canal cost 470,000 dollars, calculates that 353 miles of the New York canal will, by the rule of three, come to - - - 6,500,000

To which he adds, for increase of size and depth of water, - - - 927,960

\$7,427,960

* Official report of the canal commissioners, page 88.

The state of New-York has coupled with this great work, a northern canal, which it is supposed will cost about one million of dollars.

For the execution of labours of such magnitude, very large resources are necessary. It is not sufficient to possess an enterprising spirit; it is not enough to begin with a great bustle and great efforts: that spirit and those efforts must be sustained. It is money alone which will keep them in activity, and the enlightened state of New-York is well aware of it. Presuming that every Pennsylvanian, who takes an interest in the internal improvement of his own state, feels somewhat curious to learn the ways and means provided by New-York for the completion of her two canals, I will give an abstract of the report upon that subject.

The annual revenue of that state is now upwards of \$924,000, and its ordinary expenses about \$547,000 leaving a surplus of near \$400,000 applicable to extraordinary demands on the treasury, and to the extinguishment of *the state debt*.

It is proposed to borrow on the credit of the state one million and a half of dollars, and to appropriate 60,000 dollars of auction duties (out of 160,000 which annually accrue from that source) in part payment of the interest on that loan. And as they will then have to provide only for an annual interest on 4,500,000 dollars; (the two canals being estimated by the commissioners to cost about 6,000,000.) it is intended to raise 270,000 dollars; which is to be done as follows:

1. Interest on sale of unappropriated lands and Indian reservations, supposed to be worth two millions	120,000
2. Revenue on steam-boats. [this is a poll-tax on every traveller. If it be not an unconstitutional imposition, it is an extremely odious one]	30,000
3. Income from Salt Springs	40,000
4. A revenue from Lotteries	50,000
5. Interest on donations of lands, which are estimated at a million of dollars*	60,000
6. Auction duty as mentioned before	60,000
	<hr/> \$360 000 <hr/>

This sum will cover the interest upon the whole six millions of dollars which will be wanted, and which it is proposed to borrow either in Europe or America.

The finances of Pennsylvania will not lose by a comparison with those of New-York.

The latter has a larger income; but she has many taxes, and among others *a state tax*.

* Many individuals have patriotically given lands to this canal-fund. The Holland company, through their agent, Paul Busti, Esq. of Philadelphia, have bestowed upwards of 100,000 acres upon it, on condition that the canal shall be finished in twenty years.

The former has no state tax, and few taxes of any kind.

The latter has a large *state debt*.

The former has no debt whatever.

If then New-York has ventured under the pressure of debt and taxes, to undertake so vast a work, with how much more facility could Pennsylvania execute one (if necessary) of still greater magnitude?

The view taken by the commissioners of the trade present and future, between the Hudson and the Lakes is truly magnificent, and I cannot deny myself the satisfaction of giving it, as it will be, *even if realized to the extent here set down*, but a miniature picture of the commerce which Philadelphia may expect in her intercourse with the lakes and the rivers of the west, should she prove true to her interests, and open her way to those vast and daily augmenting sources.

It is stated by the canal commissioners, that the late Mr. Fulton, from data furnished by the custom-house, calculated the annual freight on the Hudson at 400,000 tons. And supposed that the country bordering on the canal would increase this tonnage to one million.

The present cost of transportation by land, from Buffalo to Albany, is \$100 per ton; Mr. Fulton thought the canal would reduce this to 3 dollars fifty cents. This last sum appears, however, much too small; for the toll now paid on the western inland lock navigation-company, in a distance of only one hundred miles, is five dollars and twenty-five cents, besides a considerable duty upon vessels. 'The same charge,' continue the commissioners, 'for the whole extent of the western canal, a distance of 353 miles, which is now made by that company for less than one third of the distance, would in a short time produce the enormous income of \$5,000,000; but lowering the duty to one dollar a ton, the whole expense of this magnificent operation would be defrayed in a few years; and an immense revenue would be secured to the state, which would enable it to patronize literature and science; to promote education, morality, and religion; to encourage agriculture, manufactures and commerce, and to establish the interests of human improvement upon an imperishable basis, and to an incalculable extent.'—

Surely this fine example will elicit something great from Pennsylvania. New-York is conquering nature by extraordinary efforts of art; nature, with us, has left very little for art to do. Let us then hope that the rulers of the state, will, at their approaching session, adopt some grand system of inland *water* improvement, commensurate with the wants and the means of the whole commonwealth; a system which shall extend from the western waters and the waters of the lakes to those of the Delaware. Applications upon this subject will undoubtedly be made, and urged with ardour. Government will be called upon with a voice of entreaty and earnestness. The inhabitants of the fine counties washed by

the Susquehanna will represent to it the dangers they encounter at the mouth of that river, and the unsettled situation of millions of acres for want of a safe route to market; Philadelphia, the parent town and only sea-port of the state, so long the leading commercial city of the union, will, in her petitions for succour, dwell with emphasis upon her great, though neglected, natural advantages; she will speak of the efforts of her rivals, who threaten to divert from her market the great trade of the interior. She will show how easily that trade can be brought to her own door;—how much it will increase her exports and her tonnage;—what vigour it will infuse into her commerce, her ship-building, and her mechanical arts. In connexion, too, with her own supplications, she will ask the general assembly to consider and alleviate the sufferings of her brethren who reside on the Susquehanna, or who possess lands there, and with whom Philadelphia has a reciprocity of interest and affection, and with whom she is desirous to extend an intercourse so necessary to all; she can, in short, predict the commencement of a new era whenever the Susquehanna shall mingle its waters with those of the Delaware, from which the commonwealth may date a course of prosperity surpassing far our accustomed good fortune.

The legislature will not be deaf to prayers so reasonable. Having already done much, and having the ability to do so much more, she will exercise that ability, I doubt not, with wisdom and celerity.*

Before I conclude I must say a few words more upon the lake and western commerce.

It is satisfactory for us to know, that by a few short cuts, perfectly practicable, and some small improvement in the head-waters of the interlocking rivers, we can get to the great inland seas and rivers of the north west, and west, with expedition and safety; and, as relates to lake Erie, our connexion with it is moreover of great additional importance, as furnishing at a future day, when the western states shall become populous, three or four shorter *water* routes, through those states to the rivers Ohio and Mississippi, either by the Sandusky and Scioto, lake Michigan, or the little Miami, the Wabash and Illinois rivers; all which waters approach either by lateral streams or their sources, to within a few miles of each other: indeed it is asserted in a late Ohio newspaper by the authority of B. F. Sickney, Indian agent at fort Wayne, that there now exists an uninterrupted navigation from lake Erie to some one of these rivers; [he does not say which,] and also from lake Michigan to the Mississippi, by the Auplain river, which throws

* It does not become me in this place, to suggest a plan of general improvement. Some have already been before the public: others will appear, no doubt, in due time. But whether a board of commissioners be appointed, or a guarantee be given to make good, from the public treasury all deficiencies in dividends below six per cent, to subscribers for public works, certain it is, that a scheme for general improvement is loudly called for, and anxiously expected of the state government.

part of its waters into the lake, and part into Illinois river. A Buffaloe paper mentions the following fact:

On Tuesday last [some day in July 1818.] the sloop Hannah, captain O. Coit, arrived here from Sandusky, with 350 packs of furs, belonging to Mr. A. Patterson, of Vincennes, state of Indiana. *They were brought up the Wabash to its head waters, and from thence they were carried across a portage of nine miles, into the head waters of the river Miami, above fort Wayne, and thence down that river to Sandusky. They have since proceeded to MONTREAL for a market.*

These furs would have found as good a market at Philadelphia by a route of less than one half the distance, if the water communications, either to Pittsburg or lake Erie had been opened.

This commerce is already very great, and fast augmenting. As an example of the constant and increasing movement on the Mississippi and its tributary waters, and of the immediate advantages to be derived to us by connecting those waters with the Susquehanna, by means of the Allegheny river, I will state that:

* 1st. There will be thirty steam-boats this year on the Mississippi and its tributary streams. †Five hundred and ninety-four flat-bottomed boats, and three hundred barges arrived at New-Orleans from the upper country, in the year ending October 1, 1816; fifteen hundred flat-bottomed boats and five hundred barges, ditto, in the year to October 1, 1817. A large proportion of this came from the waters which would be united with the Susquehanna, and of course would come to the Philadelphia market.

2d. More than 2000 rafts, from 2 to 300 arcs, and innumerable boats, carrying 200 barrels of flour, or 6 or 700 bushels of wheat each, descend the Susquehanna annually, in spite of its present impediments and dread of the horrible passages below Columbia. If the upper impediments were removed, as I have shown they could be, with twenty thousand dollars,‡ and a good route made to Phila-

* List of Steam-Boats trading to New Orleans.

	Tons.		Tons.	
Vesuvius,	390	Ohio,	364	} In addition, it is said in a Cincinnati paper of the 14th of August last, that the iron work and engines for 7 steam-boats are now making at the foundry of William Green & Co. Those gentlemen employ 80 workmen. 2 steam boats of 240 tons were launched in September.
Ætna,	360	Louisiana,	102	
Orleans,	324	Napoleon,	315	
Washington,	403	Franklin,	131	
Harriet,	53			
Buffalo,	246		912	
Kentucky,	112		2835	
Coustitution,	112			
Gov. Shelby,	106		3747	
Geo. Madison,	123			
Vesta,	203	Eagle,		} to be added
Genl. Jackson,	242	Pike,		
Cincinnati,	157	James Monroe,		
	<hr/> 2835			

† Letter from New-Orleans, published in the Boston Palladium.

‡ See Commissioners' report to the Legislature.

delphia, the whole of this trade would come to us, and finding here a good market, would increase beyond all measure.

3. Some years ago, I engaged a man at Sheridan's tavern, at the then upper ferry, to keep an account of all the articles brought down the Schuylkill, in the eleven boats, which plied when the waters were high, between Reading and Philadelphia.

He fulfilled this task satisfactorily, and I published the particulars at the time. The amount of these articles which consisted of flour, whiskey, iron, hats, windsor-chairs, and various et ceteras, was, for one year, between five and six hundred thousand dollars, calculated at the market prices. What then will be that amount, when the coal is added? when the trade of the west is turned into this river? when at *Flat Rock alone*,* the one hundred and forty over-shot mill-wheels are at work grinding the wheat from that inexhaustible granary, the Susquehanna? This work, without a single auxiliary, would double the exports of Philadelphia. But to these may be added grist mills, the saw mills, for sawing stone and wood, grinding of plaster of paris; cotton manufactories, woollen ditto, rolling and slitting mills, for all kinds of iron, copper, brass, and other metallic work; factories for spinning flax and hemp, nail works, trip hammers for sithes, saw-mill saws, rotatory saws, for veneer-boards, mills for turning and boring cannon; works for making anchors for ships of war and others; works for manufacturing muskets, swords with turning lathes, grind-stones, &c. mills to rasp up and manufacture dye-woods, for boring pump logs and other purposes; works for forge hammers, and various other purposes; oil mills, and cleaning flax,† &c.—All which, can be easily accommodated by the vast water power at the disposal of the company, along a distance of eighty-five miles, with a fall of four hundred and eighty feet, and may employ a capital of one hundred millions of dollars, and one hundred thousand workmen. To all which, we may further add, besides the coal and other articles, already enumerated, and ship timber of every kind, the following produce:—Oats, barley, beans, grain and pulse of all kinds; cyder, apples, and fruits of all kinds; salt, salted beef, pork and other meats; hides, tallow, beeswax; pot and pearl ashes; tanners' bark, and ground bark, plaster of Paris; hemp and flax; marble, lime, poultry, alive and dead, ginseng, cheese, butter, lard, staves, &c. &c.

And all this can be had at the following cost, *even if we have to cut a canal the whole distance from Reading to Middletown*:

Mr. Weston's estimate of a canal from the Schuyl-	
kill at Reading to Middletown, to be cut the	
whole seventy miles,	1,200,000
Estimate across the portage from Juniata to Alle-	
ghany,	120,000
	<hr/>
	1,320,000

* See report of Schuylkill Navigation Company.

† Many of which are contemplated to be erected upon a much smaller space near Boston.

Brought over,	-	-	-	1,320,000
From head waters of French creek to Erie, 15 miles,	-	-	-	170,000
Clearing the Susquehanna as per commissioners' report last year,	-	-	20,000	
Ditto head waters of interlocking rivers, suppose	-	-	50,000	
			<hr/>	70,000
Cutting canal from Tioga to Lake Seneca, as per surveyors' report,	-	-	-	560,000
			<hr/>	<hr/>
				\$2,120,000

N. B. I say nothing of the Schuylkill expense, because it is already provided for.

Here we want then only about two millions of dollars to open all these vast sources of inland commerce!

But who is to incur this expense? I answer, that if the state should decline to contribute towards it; which, however, is not at all probable, it will be for the interest of Philadelphia, *single-handed* and alone, to encounter it. This, I hope I have abundantly proved; and I will add to what I have already said, that she has at hazard a stake sufficiently large, to induce her to undertake it; that she has over and over again, the means to accomplish it; and that it is of paramount and vital importance to her existence as a great city, that she should set about it, without loss of time; that by doing so,* she will be making, not only a profitable investment to the stockholders of the funds wanted, by procuring for them the dividends authorized by law; which are twenty-five per cent. but that she will quintuple the size of her town, and be able to sustain the present value of every house in it. Her means, her wealth and property at stake, I propose to set forth, somewhat in detail: and for that purpose, I ask the attention of the reader to the following items; all which may be considered as minutely accurate, except that on merchandize, which alone is conjectural.

Estimated value of property within the *city* of Philadelphia, liable to taxation, as returned by the assessors for the year 1817—

Millions of dollars,	-	-	-	30,585,947
Add ten per cent. for commissions for collecting and allowance,	-	-	-	3,058,594

\$33,644,541

City Tax, 50 cts. per \$100 - 168,222 70

From this deduct abatement, supposed

to have been made by the city com-

missioners, - - - - 3,410 38

164,812 32

* See the laws incorporating Union Canal Company.

Amount brought up,	-	-	-	164,812	32
County Tax 35 cts. per \$100 on pro-					
erty valued at \$55,418,579 00*	-	-	-	193,965	01
Poor tax,	-	-	-	156,461	35
				<hr/>	
				\$515,238	68

Now by the following estimate, the *coal* alone brought down the Schuylkill, will annually save to the city and county, nearly the whole of this enormous tax, as thus:

The city and county are supposed to consume annually two hundred thousand cords of wood, at six dollars,	1,200,000
Equal at twelve bushels per cord to two millions	
four hundred thousand bushels, which at thirty	
cents per bushel (a very high estimate)	720,000
	<hr/>
<i>Saving—difference,</i>	\$480,000

Again.

The whole of the assessment upon which our city and county tax is levied, amounts officially as above, to	\$55,418,579
As it is well known that these assessments are made upon property valued <i>at most</i> , at one-half of their market price, I will double this sum, in order to come at an estimate of the <i>real estate</i> in the city and county of Philadelphia, which will be thus,	\$110,837,158
Add to this, bank stock in the city and county,†	17,516,000
	<hr/>
	128,353,158
Insurance Stock.‡	3,800,000
	<hr/>
	132,153,158

* This includes the valuation of city and county by the assessors.

† Commercial bank,	Dolls. 1,000,000
Germantown,	153,000
Mechanics,	534,000
Northern Liberties,	250,000
Schuylkill,	400,000
Pennsylvania,	2,500,000
Farmers' and Mechanics',	1,250,000
Philadelphia,	1,800,000
Bank United States,	8,000,000
Girard's Bank,	800,000
Bank North America,	830,000
	<hr/>
	Dollars 17,516,000

‡ North America,	Dolls. 600,000
Pennsylvania,	500,000
Philadelphia,	400,000
Phenix,	480,000
Union,	300,000
Delaware,	200,000
United States,	100,000
Marine,	300,000
	<hr/>
	2,880,000

Amount brought up,	-	-	-	132,153,158
<i>Shipping.</i> Philadelphia owned in 1817, ninety-five thousand, four hundred and fifty-three tons of shipping, which at forty dollars per ton for vessels fully equipped, will be	-	-	-	3,818,120
<i>Capital in foreign commerce, merchandize, furniture, &c.</i> It is impossible to do more than conjecture upon these points. But if we take into view, monies vested in bonds, in public stock, in plate, furniture, and especially in merchandize: if we consider the number and opulence of our stores and shops—the great capital employed in the China, India, and other foreign trade, we might, perhaps, with safety carry the aggregate amount of these objects as high as the real estate; but to be within bounds, I place it at only the one-half,				55,271,278
				<hr/> \$191,371,278 <hr/>

It is true that the state has a concern in our bank-stock, to the amount of about 2,100,000 dollars; from which should be deducted, however, the proportional interest which the city and county of Philadelphia, as a component part of the state, has in this fund; but the whole among so many millions is too small an item to separate. It is true also that our merchants owe debts upon these sums; but debts are likewise due to them. At any rate their debts are *stakes*; they are answerable for them, and must pay them.

THE PROPERTY AT STAKE, THEN, IN THE CITY AND COUNTY OF PHILADELPHIA, AMOUNTS TO NEAR TWO HUNDRED MILLIONS OF DOLLARS!

Foreign commerce, during the golden days of neutrality, and a monopoly of the best share of the western trade, have heaped together in this small district, so vast a treasure. But our foreign commerce is less extensive and less gainful now, and rivals to the north and south are about to deprive us of our home trade. We must defeat their efforts; we must maintain, protect, and increase these riches. We can and will baffle the attempts of our neighbours. We have a *motive* in the defence of our *property*; we have

Amount brought over,	-	-	-	-	2,800,000
Fire Insurance offices, American and others, and offices for insuring lives,	1,000,000
					<hr/> Dollars 3,800,000 <hr/>

N. B. I know that some of these companies have diminished their capitals, by buying in their own stock; but others again have large contingent funds; so that the one will balance the other.

the *means* in that *property* itself; and *nature* points out to us the *road*:—a road, broad, fair, safe, and interminable! If we follow it, we shall insure to ourselves, without the possibility of rivalry from any quarter, the most brilliant career and highest destiny. We may command at one and the same time, the trade of the Great lakes—of the Ohio—half the Mississippi—the whole of the Missouri—three parts of Pennsylvania,—and one third of New-York;—and in such event—an event in train to be realized—we shall see the expectations of the great founder of our city fulfilled. We shall behold store-houses and commercial streets lining the banks of the Schuylkill, and receding east, until they meet those of the Delaware, and thus cover the vast area marked out by Penn, as the ground-plot of his city of brotherly love.

APPENDIX.

[See page 22, *New York and Connecticut School appropriations.*]

By the report of the honourable James Hillhouse, commissioner of the school-fund, dated May, 1818, it appears that the exact amount of that fund was then, one million six hundred and eight thousand, six hundred and seventy-three dollars eighty-nine cents.

Governor Clinton says in his speech to the legislature of New York, last January:

‘The flourishing condition of our higher seminaries of education is a pleasing demonstration of the increasing progress of mental improvement, and a powerful incentive to liberal dispensations of public patronage. Under the auspices of learned and enlightened instructors, our colleges are constantly increasing in students, and extending in usefulness; and the intermediate seminaries between the common schools and colleges, have also greatly diffused the blessings of education. Funds to the amount of 750,000 dollars, have been granted to the three colleges, and about 100,000 dollars to the thirty-eight incorporated academies. While this liberality of patronage reflects honour on the state, it cannot be too forcibly inculcated, nor too generally understood, that in promoting the great interests of moral and intellectual cultivation, there can be no prodigality in the application of the public treasure.’

Virginia has endowed her colleges and schools in the most liberal manner, and so has North Carolina.

South Carolina has expended within the last twenty years 200,000 dollars in buildings and other accommodations for its university, and has paid from the public treasury 12,000 dollars annually towards the support of the instructors.

In Massachusetts, by a wise provision in the constitution of that commonwealth, it is made the duty of the legislature to foster the interests of the University at Cambridge. Most liberal grants have been made from time to time by the state, and large donations by individuals; so that the institution now enjoys an annual income of more than forty thousand dollars, principally from permanent funds.

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